FEDERAL-F: A multi-regional multi-sectoral dynamic model of the Australian economy

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by

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APPENDIX A: FEDERAL F EQUATION SYSTEM

1. CURRENT PRODUCTION AND COMMODITY OUTPUTS

Intermediate input demands for current production, domestic sourcing: Equation *E_x1A*

$$x1_{i,s,j,r} = zact_{j,r} - \mathrm{ZIG1}_{i,s,j,r} \times \left\{ p1_{i,s,j,r} + a1isjr_{i,s,j,r} - \sum_{t \in SOU} \mathrm{SHSTAR1}_{i,t,j,r} \times \left(p1_{i,t,j,r} + a1isjr_{i,t,j,r} \right) \right\} + a\_in1_{j,r} + a1isjr_{i,s,j,r} - twist1_{i,s,j,r} - \left[\mathrm{SOURCEDOM2}_{s} - \mathrm{SH1}_{i,1,j,r} / \left[\mathrm{SH1}_{i,1,j,r} + \mathrm{SH1}_{i,2,j,r} \right] \right] \times twist\_is1_{i,j,r}$$

i ∈ COM
s ∈ REG
j ∈ IND
r ∈ REG

Intermediate input demands for current production, foreign sourcing: *E_x1B*

$$x1_{i,RoW,j,r} = zact_{j,r} - \mathrm{ZIG1}_{i,\mathrm{RoW},j,r} \times \left\{ p1_{i,RoW,j,r} + a1isjr_{i,RoW,j,r} - \sum_{t \in SOU} \mathrm{SHSTAR1}_{i,t,j,r} \times \left(p1_{i,t,j,r} + a1isjr_{i,t,j,r} \right) \right\} + a\_in1_{j,r} + a1isjr_{i,RoW,j,r} - twist1_{i,RoW,j,r}$$

i ∈ COM
j ∈ IND
r ∈ REG

Demand for labour by regional industry *jr*: Equation *E_x_prim1*

$$x\_prim_{labour,j,r} = zact_{j,r} - \mathrm{ZIGPRI}_{\mathrm{labour},j,r} \times \left\{ pprim_{labour,j,r} - \sum_{u \in FAC} \left(\mathrm{SHSTARPR}_{u,j,r} \times pprim_{u,j,r} \right) \right\} + a\_in1_{j,r} + a\_fac_{labour,j,r} - \mathrm{ZIGPRI}_{\mathrm{labour},j,r} \times \left\{ a\_fac_{labour,j,r} - \sum_{u \in FAC} \mathrm{SHSTARPR}_{u,j,r} \times a\_fac_{u,j,r} \right\} + \mathrm{LKSHARE}_{\mathrm{capital},j,r} \times twistlk_{j,r}$$

j ∈ IND
r ∈ REG

Demand for capital by regional industry *jr*: Equation *E_x_prim2*

$$x\_prim_{capital,j,r} = zact_{j,r} - \mathrm{ZIGPRI}_{\mathrm{capital},j,r} \times \left\{ pprim_{capital,j,r} - \sum_{u \in FAC} \mathrm{SHSTARPR}_{u,j,r} \times pprim_{u,j,r} \right\} + a\_in1_{j,r} + a\_fac_{capital,j,r} - \mathrm{ZIGPRI}_{\mathrm{capital},j,r} \times \left\{ a\_fac_{capital,j,r} - \sum_{u \in FAC} \mathrm{SHSTARPR}_{u,j,r} \times a\_fac_{u,j,r} \right\} - \mathrm{LKSHARE}_{\mathrm{labour},j,r} \times twistlk_{j,r}$$

j ∈ IND
r ∈ REG

Demand for agricultural land by regional industry *jr*: Equation *E_x_prim3*

$$x\_prim_{land,j,r} = zact_{j,r} - \text{ZIGPRI}_{land,j,r} \times \left[pprim_{land,j,r} - \sum_{u \in FAC} \text{SHSTARPR}_{u,j,r} \times pprim_{u,j,r} \right] + a\_inl_{j,r} + a\_fac_{land,j,r} - \text{ZIGPRI}_{land,j,r} \times \left\{ a\_fac_{land,j,r} - \sum_{u \in FAC} \text{SHSTARPR}_{u,j,r} \times a\_fac_{u,j,r} \right\}$$

j ∈ IND
r ∈ REG

Equalisation of L/K twists across regional industries: Equation *E_ff_twistlk*

$$twistlk_{j,r} = ff\_twistlk_{j,r} + fr\_twistlk_{r} + f\_twistlk$$

j ∈ IND
r ∈ REG

State government production taxes per unit output: Equation *E_xsptax*

$$xsptax_{j,r} = zact_{j,r}$$

j ∈ IND
r ∈ REG

Commonwealth Government production taxes per unit output: Equation *E_xcptax*

$$xcptax_{j,r} = zact_{j,r}$$

j ∈ IND
r ∈ REG

Usage of "other costs" by industry *jr*: Equation *E_xcost*

$$xcost_{j,r} = zact_{j,r} + a\_inl_{j,r}$$

j ∈ IND
r ∈ REG

Demand for occupational type *q* by regional industry *j,r*: Equation *E_x_lab*

$$x\_lab_{q,j,r} = x\_prim_{"AI",j,r} - \text{ZIGOCC}_{q,j,r} \times \left[plab_{q,j,r} - \sum_{m \in OCC} \text{SHSTAROC}_{m,j,r} \times plab_{m,j,r} \right]$$

q ∈ OCC
j ∈ IND
r ∈ REG

Output of good *i* by regional industry *j,r*: Equation *E_x_rind*

$$x\_rind_{i,j,r} = \text{SHOIRJ}_{i,j,r} \times zact_{j,r}$$

i ∈ COM
j ∈ IND
r ∈ REG

Total output of good *u* from region *r*: Equation *E_x_tot*

$$x\_tot_{u,r} = \sum_{j \in IND} B\_ZERO_{u,j,r} \times x\_rind_{u,j,r} \qquad \begin{array}{l} u \in COM \\ r \in REG \end{array}$$

Economy-wide output of commodity *u*: Equation *E_x_total*

$$\left[\sum_{r \in REG} SALES_{u,r} + TINY\right] \times x\_total_u = \sum_{r \in REG} SALES_{u,r} \times x\_tot_{u,r} \qquad u \in COM$$

Output by regional commodity sector: Equation *E_x_sr*

$$\left[\sum_{i \in QINDEXNO_s} SALES_{i,r} + TINY\right] \times \left(x\_sr_{s,r} + fxsr_r\right) = \sum_{i \in QINDEXNO_s} SALES_{i,r} \times x\_tot_{i,r} \qquad \begin{array}{l} s \in XCOMO \\ r \in REG \end{array}$$

Output by national commodity sector: Equation *E_x_s*

$$\left[\sum_{r \in REG} \sum_{i \in QINDEXNO_s} SALES_{i,r} + TINY\right] \times x\_s_s = \sum_{r \in REG} \left[\sum_{i \in QINDEXNO_s} SALES_{i,r} + TINY\right] \times x\_sr_{s,r} \qquad s \in XCOMO$$

Link between exogenous sectoral output categories and FEDERAL-F output categories: Equation *E_fx_tot*

$$x\_tot_{i,r} = fx\_tot_{i,r} + \sum_{s=QMAPNO_i}^{QMAPNO_i} fx\_sr_{s,r} \qquad \begin{array}{l} i \in COM \\ r \in REG \end{array}$$

Link between exogenous determination of national sectoral outputs and FEDERAL-F output categories: Equation *E_fx_total*

$$x\_total_i = fx\_total_i + \sum_{s=QMAPNO_i}^{QMAPNO_i} fx\_s_s \qquad i \in COM$$

Endogenous determination of commodity *i* using technical change: Equation *E_fai*

$$ai_i = fai_i + \sum_{s=QMAPNO_i}^{QMAPNO_i} shift\_ai_s + X\_DAMP_i \times \left[\sum_{s=QMAPNO_i}^{QMAPNO_i} x\_s_s - x\_total_i\right] \qquad i \in COM$$

Cost impact of commodity using technical change neutralised by all input saving technical change, current production: Equation *E_del_f_a1*

$$-\left[\mathrm{TOTCOST}_{j,r} - \mathrm{MX1}_{j,r} - \mathrm{MX2}_{j,r}\right] \times a\_in1_{j,r} = \sum_{i \in \mathrm{COM}} \sum_{s \in \mathrm{SOU}} \mathrm{PV1}_{i,s,j,r} \times \left(ais_{i,s} + ai_i\right) + 100 \times del\_f\_a1_{j,r} \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

Cost impact of commodity using technical change neutralised by all input saving technical change, capital creation: Equation *E_del_f_a2*

$$-\mathrm{VINVEST}_{j,r} \times a\_in2_{j,r} = \sum_{i \in \mathrm{COM}} \sum_{s \in \mathrm{SOU}} \mathrm{PV2}_{i,s,j,r} \times \left(ais_{i,s} + ai_i\right) + 100 \times del\_f\_a2_{j,r} \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

Employment for 22 employment sectors by region: Equation *E_emp_s*

$$\left[\sum_{j \in \mathrm{EMPNO22}_s} \mathrm{U\_TOT}_{j,r}\right] \times \left(emp\_s_{s,r} + f\_lr\_emp_r\right) = \sum_{j \in \mathrm{EMPNO22}_s} \mathrm{U\_TOT}_{j,r} \times empjr_{j,r} \qquad \begin{array}{l} s \in \mathrm{IND22} \\ r \in \mathrm{REG} \end{array}$$

Link between exogenous employment categories and FEDERAL-F employment categories: Equation *E_fempjr*

$$empjr_{j,r} = fempjr_{j,r} + \sum_{s=\mathrm{ENO22}_j}^{\mathrm{ENO22}_j} femp\_s_{s,r} \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

Equalisation of primary factor productivity shifts within industries: Equation *E_ffafac*

$$f\_a\_facjr_{j,r} = ffafac_{j,r} + \sum_{s=\mathrm{ENO22}_j}^{\mathrm{ENO22}_j} shift\_afac_{s,r} \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

Link between exogenous determination of regional industry employments and regional industry labour demands: Equation *E_empjr*

$$empjr_{j,r} = x\_prim_{labour,j,r}$$

Exogenous determination of intermediate input technical change: Euqation *E_a1isjr*

$$a1isjr_{i,s,j,r} = f\_a\_mat\_ijr_{i,j,r} + f\_a\_mat\_i_i + f\_a\_mat\_ir_{i,r} + ai_i + ais_{is} \qquad \begin{array}{l} i \in \mathrm{COM} \\ s \in \mathrm{SOU} \\ j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

Exogenous determination of primary factor technical change: Equation *E_a_fac*

$$a\_fac_{v,j,r} = f\_a\_facvjr_{v,j,r} + f\_a\_facj_{j} + f\_a\_facvj_{v,j} + f\_a\_facr_{r} + f\_a\_facvr_{v,r} + f\_a\_facjr_{j,r} + f\_a\_fac \qquad \begin{array}{l} v \in FAC \\ j \in IND \\ r \in REG \end{array}$$

2. ZERO PURE PROFIT CONDITIONS AND THE PRICE SYSTEM

Zero pure profits in the production of good *i* by regional industry *jr*: Equation *E_zact*

$$\sum_{i\in COM}\left(H\_REV_{i,j,r}\times p\_basic_{i,r}\right)=\sum_{i\in COM}\sum_{s\in SOU} H1_{i,s,j,r}\times\left(p1_{i,s,j,r}+a1isjr_{i,s,j,r}\right)$$
$$+H\_FAC_{labour,j,r}\times pprim_{labour,j,r}+H\_FAC_{capital,j,r}\times pprim_{capital,j,r}$$
$$+H\_FAC_{land,j,r}\times pprim_{land,j,r}+HSGPTAX_{j,r}\times spptax_{j,r}$$
$$+HCGPTAX_{j,r}\times cpptax_{j,r}+H\_OC_{j,r}\times pcost$$
$$+\left[\,1-HSGPTAX_{j,r}-HCGPTAX_{j,r}\,\right]\times a\_in1_{j,r}+\sum_{v\in FAC}\left(H\_FAC_{v,j,r}\times a\_fac_{v,j,r}\right)$$

$j\in IND$
$r\in REG$

Zero pure profits in the provision of intermediate inputs to current producers, domestic sources: Equation *E_p1A*

$$\left[PV1_{i,s,j,r}+TINY\right]\times p1_{i,s,j,r}=$$
$$\left[BAS1_{i,s,j,r}\times POWTAX1_{i,s,r}\right]\times\left(p\_basic_{i,s}+powtax1ph_{i,s,r}\right)+$$
$$\sum_{u\in MAR}\sum_{t\in REG} MAR1_{i,s,j,r,u,t}\times\left(p\_basic_{u,t}+a1mar_{u,t,i,s,j,r}\right)$$
$$+TAX1_{i,s,j,r,r}\times g\_sint_{i,s,j,r,Int}+TAX1_{i,s,j,r,Fed}\times g\_cint_{i,s,j,r,Int}$$

$i\in COM$
$s\in REG$
$j\in IND$
$r\in REG$

Zero pure profits in the provision of intermediate inputs to current producers, foreign sources: Equation *E_p1B*

$$\left[PV1_{i,RoW,j,r}+TINY\right]\times p1_{i,RoW,j,r}=BAS1_{i,RoW,j,r}\times p\_basic_{i,RoW}+$$
$$\sum_{u\in MAR}\sum_{t\in REG} MAR1_{i,RoW,j,r,u,t}\times\left(p\_basic_{u,t}+a1mar_{u,t,i,RoW,j,r}\right)+$$
$$TAX1_{i,RoW,j,r,r}\times g\_sint_{i,RoW,j,r,Int}+TAX1_{i,RoW,j,r,Fed}\times g\_cint_{i,RoW,j,r,Int}$$

$i\in COM$
$j\in IND$
$r\in REG$

Zero pure profits in the provision of inputs to capital creators, local sources: Equation *E_p2A*

$$\left[PV2_{i,s,j,r}+TINY\right]\times p2_{i,s,j,r}=$$
$$\left[BAS2_{i,s,j,r}\times POWTAX2_{i,s,r}\right]\times\left(p\_basic_{i,s}+powtax2ph_{i,s,r}\right)+$$
$$\sum_{u\in MAR}\sum_{t\in REG} MAR2_{i,s,j,r,u,t}\times\left(p\_basic_{u,t}+a2mar_{u,t,i,s,j,r}\right)+$$
$$TAX2_{i,s,j,r,r}\times g\_sint_{i,s,j,r,Kap}+TAX2_{i,s,j,r,Fed}\times g\_cint_{i,s,j,r,Kap}$$

$i\in COM$
$s\in REG$
$j\in IND$
$r\in REG$

Zero pure profits in the provision of inputs to capital creators, foreign source: Equation *E_p2B*

$$\begin{aligned}&\left[\mathrm{PV2}_{\mathrm{i,RoW,j,r}}+\mathrm{TINY}\right]\times p2_{i,RoW,j,r}=\\&\mathrm{BAS2}_{\mathrm{i,RoW,j,r}}\times p\_basic_{i,RoW}+\sum_{u\in\mathrm{MAR}}\sum_{t\in\mathrm{REG}}\mathrm{MAR2}_{\mathrm{i,RoW,j,r,u,t}}\\&\times\left(p\_basic_{u,t}+a2mar_{u,t,i,RoW,j,r}\right)+\mathrm{TAX2}_{\mathrm{i,RoW,j,r,r}}\times g\_sint_{i,RoW,j,r,Kap}+\\&\mathrm{TAX2}_{\mathrm{i,RoW,j,r,Fed}}\times g\_cint_{i,RoW,j,r,Kap}\end{aligned}$$

i ∈ COM
j ∈ IND
r ∈ REG

Zero pure profits in the supply of Australian goods to regional households: Equation *E_p3A*

$$\begin{aligned}&\left[\mathrm{PV3}_{\mathrm{i,s,r}}+\mathrm{TINY}\right]\times p3r_{i,s,r}=\left[\mathrm{BAS3}_{\mathrm{i,s,r}}\times\mathrm{POWTAX3}_{\mathrm{i,s,r}}\right]\times\\&\left(p\_basic_{i,s}+powtax3ph_{i,s,r}\right)+\left[\sum_{t\in\mathrm{REG}}\mathrm{TAX3}_{\mathrm{i,s,r,t}}\right]\times g\_stax_{i,s,r}+\\&\mathrm{TAX3}_{\mathrm{i,s,r,"Fed"}}\times g\_ctax_{i,s,r}+\\&\sum_{u\in\mathrm{MAR}}\sum_{t\in\mathrm{REG}}\mathrm{MAR3}_{\mathrm{i,s,r,u,t}}\times\left(p\_basic_{u,t}+a3mar_{u,t,i,s,r}\right)\end{aligned}$$

i ∈ COM
s ∈ REG
r ∈ REG

Zero pure profits in the provision of imports to domestic households: Equation *E_p3B*

$$\begin{aligned}&\left[\mathrm{PV3}_{\mathrm{i,RoW,r}}+\mathrm{TINY}\right]\times p3r_{i,RoW,r}=\\&\mathrm{BAS3}_{\mathrm{i,RoW,r}}\times p\_basic_{i,RoW}+\left[\sum_{t\in\mathrm{REG}}\mathrm{TAX3}_{\mathrm{i,RoW,r,t}}\right]\times g\_stax_{i,RoW,r}+\\&\mathrm{TAX3}_{\mathrm{i,RoW,r,Fed}}\times g\_ctax_{i,RoW,r}+\sum_{u\in\mathrm{MAR}}\sum_{t\in\mathrm{REG}}\mathrm{MAR3}_{\mathrm{i,RoW,r,u,t}}\times\left(p\_basic_{u,t}+a3mar_{u,t,i,RoW,r}\right)\end{aligned}$$

i ∈ COM
r ∈ REG

Zero pure profits in exporting: Equation *E_p_rexp*

$$\begin{aligned}&\left[\mathrm{PV4}_{\mathrm{i,r}}+\mathrm{TINY}\right]\times\left(p\_rexp_{i,r}+x\_rate\right)=\\&\left[\mathrm{BAS4}_{\mathrm{i,r}}\times\mathrm{POWTAX4}_{\mathrm{i,r}}\right]\times\left(p\_basic_{i,r}+powtax4ph_{i,r}\right)+\\&\mathrm{TAX4}_{\mathrm{i,r,Fed}}\times g\_extax_{i,r}+\sum_{u\in\mathrm{MAR}}\sum_{t\in\mathrm{REG}}\mathrm{MAR4}_{\mathrm{i,r,u,t}}\times\left(p\_basic_{u,t}+a4mar_{u,t,i,r}\right)\end{aligned}$$

i ∈ COM
r ∈ REG

Zero pure profits in the provision of Australian goods to regional governments: Equation *E_p_sgovA*

$$\begin{aligned}&\left[\mathrm{PV5}_{\mathrm{i,s,r}}+\mathrm{TINY}\right]\times p\_sgov_{i,s,r}=\\&\left[\mathrm{BAS5}_{\mathrm{i,s,r}}\times\mathrm{POWTAX5}_{\mathrm{i,s,r}}\right]\times\left(p\_basic_{i,s}+powtax5ph_{i,s,r}\right)+\\&\sum_{u\in\mathrm{MAR}}\sum_{t\in\mathrm{REG}}\mathrm{MAR5}_{\mathrm{i,s,r,u,t}}\times\left(p\_basic_{u,t}+a5mar_{u,t,i,s,r}\right)\end{aligned}$$

i ∈ COM
s ∈ REG
r ∈ REG

Zero pure profits in the provision of imported goods to regional governments: Equation *E_p_sgovB*

$$\begin{aligned}&\left[\mathrm{PV5}_{\mathrm{i,RoW,r}}+\mathrm{TINY}\right]\times p\_sgov_{i,RoW,r}=\\&\mathrm{BAS5}_{\mathrm{i,RoW,r}}\times p\_basic_{i,RoW}+\sum_{u\in\mathrm{MAR}}\sum_{t\in\mathrm{REG}}\mathrm{MAR5}_{\mathrm{i,RoW,r,u,t}}\times\left(p\_basic_{u,t}+a5mar_{u,t,i,RoW,r}\right)\end{aligned}$$

i ∈ COM
r ∈ REG

Zero pure profits in the provision of Australian goods to the Commonwealth Government: Equation *E_p_cgovA*

$$\begin{aligned}&\left[\mathrm{PVCG}_{i,s}+\mathrm{TINY}\right]\times p\_cgov_{i,s}=\\&\left[\mathrm{BAS6}_{i,s}\times\mathrm{POWTAX6}_{i,s}\right]\times\left(p\_basic_{i,s}+powtax6ph_{i,s}\right)+\\&\sum_{u\in MAR}\sum_{t\in REG}\mathrm{MAR6}_{i,s,u,t}\times\left(p\_basic_{u,t}+a6mar_{u,t,i,s}\right)\end{aligned}$$

i ∈ COM
r ∈ REG

Zero pure profits in the provision of imported goods to the Commonwealth Government: Equation *E_p_cgovB*

$$\begin{aligned}&\left[\mathrm{PVCG}_{i,\mathrm{RoW}}+\mathrm{TINY}\right]\times p\_cgov_{i,RoW}=\\&\mathrm{BAS6}_{i,\mathrm{RoW}}\times p\_basic_{i,RoW}+\sum_{u\in MAR}\sum_{t\in REG}\mathrm{MAR6}_{i,\mathrm{RoW},u,t}\times\left(p\_basic_{u,t}+a6mar_{u,t,i,RoW}\right)\end{aligned}$$

i ∈ COM

Zero pure profits in the construction of capital in regional industry *jr*: Equation *E_pi*

$$pi_{j,r}=\sum_{i\in COM}\sum_{s\in SOU}\mathrm{H2S}_{i,s,j,r}\times\left(p2_{i,s,j,r}+a\_in2_{j,r}+a2isjr_{i,s,j,r}\right)$$

j ∈ IND
r ∈ REG

Zero pure profits in importing: Equation *E_p_basic3*

$$p\_basic_{i,RoW}=\mathrm{TARF}_i\times\left(pmp_i+x\_rate\right)+\left[1-\mathrm{TARF}_i\right]\times g\_tar_i$$

i ∈ COM

Price of labour faced by regional industry *j,r*: Equation *E_pprimL*

$$pprim_{labour,j,r}=\sum_{q\in OCC}\mathrm{SHOCC}_{q,j,r}\times plab_{q,j,r}$$

j ∈ IND
r ∈ REG

Prices of composite commodities consumed by households: Equation *E_p3*

$$p3_{i,r}=\sum_{s\in SOU}\mathrm{SHR3}_{i,s,r}\times p3r_{i,s,r}$$

i ∈ COM
r ∈ REG

Price of agricultural land to using industries: Equation *E_p_land*

$$\begin{aligned}&\left[\sum_{s\in OWNERS}\left(\mathrm{MW1}_{s,j,r}+\mathrm{MW2}_{s,j,r}\right)\right]\times pprim_{land,j,r}=\\&\left[\sum_{t\in OWNERS}\mathrm{MW1}_{t,j,r}\right]\times p\_land_{j,r}+\left[\sum_{t\in OWNERS}\mathrm{MW2}_{t,j,r}\right]\times p\_landtx_{j,r}\end{aligned}$$

j ∈ AGG
r ∈ REG

Economy-wide price of working capital: Equation *E_pcost*

$$pcost = p3nat$$

3. MARKET CLEARING CONDITIONS

Market clearing condition for margin commodities: Equation *E_p_basicMAR*

$$
\begin{aligned}
&[\mathrm{SALES}_{i,s} + \mathrm{TINY}] \times x\_tot_{i,s} = \sum_{j \in \mathrm{IND}} \sum_{r \in \mathrm{REG}} \mathrm{BAS1}_{i,s,j,r} \times xI_{i,s,j,r} \\
&+ \sum_{j \in \mathrm{IND}} \sum_{r \in \mathrm{REG}} \mathrm{BAS2}_{i,s,j,r} \times x2_{i,s,j,r} + \sum_{r \in \mathrm{REG}} \mathrm{BAS3}_{i,s,r} \times xr\_hous_{i,s,r} \\
&+ \mathrm{BAS4}_{i,s} \times xr\_exp_{i,s} + \sum_{r \in \mathrm{REG}} \mathrm{BAS5}_{i,s,r} \times x\_sg_{i,s,r} + \mathrm{BAS6}_{i,s} \times x\_cg_{i,s} \\
&+ \sum_{u \in \mathrm{COM}} \sum_{t \in \mathrm{SOU}} \sum_{j \in \mathrm{IND}} \sum_{r \in \mathrm{EG}} \mathrm{MAR1}_{u,t,j,r,i,s} \times x\_mar1_{i,s,u,t,j,r} \\
&+ \sum_{u \in \mathrm{COM}} \sum_{t \in \mathrm{SOU}} \sum_{j \in \mathrm{IND}} \sum_{r \in \mathrm{EG}} \mathrm{MAR2}_{u,t,j,r,i,s} \times x\_mar2_{i,s,u,t,j,r} \\
&+ \sum_{u \in \mathrm{COM}} \sum_{t \in \mathrm{SOU}} \sum_{r \in \mathrm{REG}} \mathrm{MAR3}_{u,t,r,i,s} \times x\_mar3_{i,s,u,t,r} \\
&+ \sum_{u \in \mathrm{COM}} \sum_{t \in \mathrm{SOU}} \sum_{r \in \mathrm{REG}} \mathrm{MAR5}_{u,t,r,i,s} \times x\_mar5_{i,s,u,t,r} \\
&+ \sum_{u \in \mathrm{COM}} \sum_{t \in \mathrm{SOU}} \mathrm{MAR4}_{u,t,i,s} \times x\_mar4_{i,s,u,t} \\
&+ \sum_{u \in \mathrm{COM}} \sum_{t \in \mathrm{SOU}} \mathrm{MAR6}_{u,t,i,s} \times x\_mar6_{i,s,u,t}
\end{aligned}
\qquad \begin{array}{l} i \in \mathrm{MAR} \\ s \in \mathrm{REG} \end{array}
$$

Market clearing condition for domestically produced non margin commodities: Equation *E_p_basicNMAR*

$$
\begin{aligned}
&[\mathrm{SALES}_{i,s} + \mathrm{TINY}] \times x\_tot_{i,s} = \sum_{j \in \mathrm{IND}} \sum_{r \in \mathrm{REG}} \mathrm{BAS1}_{i,s,j,r} \times xI_{i,s,j,r} + \\
&\sum_{j \in \mathrm{IND}} \sum_{r \in \mathrm{REG}} \mathrm{BAS2}_{i,s,j,r} \times x2_{i,s,j,r} + \sum_{r \in \mathrm{REG}} \mathrm{BAS3}_{i,s,r} \times xr\_hous_{i,s,r} + \\
&\mathrm{BAS4}_{i,s} \times xr\_exp_{i,s} + \sum_{r \in \mathrm{REG}} \mathrm{BAS5}_{i,s,r} \times x\_sg_{i,s,r} + \mathrm{BAS6}_{i,s} \times x\_cg_{i,s}
\end{aligned}
\qquad \begin{array}{l} i \in \mathrm{NONMAR} \\ s \in \mathrm{REG} \end{array}
$$

Market clearing for physical capital: Equation *E_pprimK*

$$
cap\_at\_t_{j,r} = x\_prim_{capital,j,r} \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}
$$

Market clearing for agricultural land: Equation *E_pprimN*

$$
n\_agland_{j,r} = x\_prim_{land,j,r} \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}
$$

Supply of agricultural land to agricultural industries: Equation *E_n_aglandA*

$$W\_TOT_{j,r} \times n\_agland_{j,r} = \sum_{t \in OWNERS} \left[MW1_{t,j,r} + MW2_{t,j,r}\right] \times on\_agland_{t,j,r} \qquad \begin{array}{l} j \in AGG \\ r \in REG \end{array}$$

Supply of agricultural land to non-agricultural industries: Equation *E_n_aglandNA*

$$n\_agland_{j,r} = 0 \qquad \begin{array}{l} j \in NONAGG \\ r \in REG \end{array}$$

Regional market clearing of skill type *m*: Equation *E_lrm_emp*

$$lrm\_emp_{m,r} = \sum_{j \in IND} B\_EMP_{m,j,r} \times x\_lab_{m,j,r} \qquad \begin{array}{l} m \in OCC \\ r \in REG \end{array}$$

Market clearing condition for working capital: Equation *E_f_oxcost_1*

$$\sum_{j \in IND} \sum_{r \in REG} MX3_{j,r} \times xcost_{j,r} = \sum_{t \in OWNERS} OXX3_{t} \times oxcost_{t}$$

Supply of working capital: Equation *E_oxcost*

$$oxcost_{t} = f\_oxcost_{t} \qquad t \in OWNERS$$

4. HOUSEHOLD INCOME, CONSUMPTION, SAVINGS AND CAPITAL OWNERSHIP

Household demand for commodity *i*, irrespective of source: Equation *E_x_hous*

$$x\_hous_{i,r} = qhous_r + \text{EPSIL}_{i,r} \times [cnr_r - qhous_r] + \sum_{k \in COM} (\text{ETA}_{i,k,r} \times p3_{k,r}) + a3_{i,r} - ave\_a3_r$$

i ∈ COM
r ∈ REG

Household demands for domestic products: Equation *E_xr_housA*

$$xr\_hous_{i,s,r} = x\_hous_{i,r} - \text{ZIG3}_{i,s,r} \times \left\{ p3r_{i,s,r} - \sum_{t \in SOU} \text{SHSTAR3}_{i,t,r} \times p3r_{i,t,r} \right\} - twist3_{i,s,j,r} - \left[\text{SOURCEDOM2}_s - \text{SH3}_{i,1,r} \; / \; [\text{SH3}_{i,1,r} + \text{SH3}_{i,2,r}] \right] \times twist\_is3_{i,r}$$

i ∈ COM
s ∈ REG
r ∈ REG

Household demands for foreign products: Equation *E_xr_housB*

$$xr\_hous_{i,RoW,r} = x\_hous_{i,r} - \text{ZIG3}_{i,RoW,r} \times \left\{ p3r_{i,RoW,r} - \sum_{t \in SOU} \text{SHSTAR3}_{i,t,r} \times p3r_{i,t,r} \right\} - twist3_{i,RoW,r}$$

i ∈ COM
r ∈ REG

Average value of $a3_{i,r}$: Equation *E_ave_a3*

$$ave\_a3_r = \sum_{i \in COM} \text{A\_BUDGET}_{i,r} \times a3_{i,r}$$

r ∈ REG

Change in subsistence consumption of *i*: Equation *E_d_gamma*

$$d\_gamma_{i,r} = \left[1 + \text{EPSIL}_{i,r} / \text{FRISCH}_r \right] \times (a3_{i,r} - ave\_a3_r)$$

i ∈ COM
r ∈ REG

Movements in marginal budget shares in the linear expenditure system: Equation *E_deltapc*

$$deltapc_{i,r} = a3_{i,r} - \sum_{k \in COM} \text{MAR\_BUDGET}_{k,r} \times a3_{k,r}$$

i ∈ COM
r ∈ REG

Consumption of FEDERAL-F/national accounts commodities related to consumption of FEDERAL-F commodities: Equation *E_x3ncom*

$$\left(x3ncom_{na,r} + f\_x3r_r\right) = \sum_{i \in COM} SMMI_{i,na,r} \times x3\_ff\_na_{i,na,r} \qquad \begin{array}{l} na \in NCOM \\ r \in REG \end{array}$$

Consumption of FEDERAL-F commodities related to consumption of FEDERAL-F/national accounts commodities: Equation *E_x3_na_i*

$$x3\_na\_i_{i,r} = \sum_{na \in NCOM} SMMNA_{i,na,r} \times x3\_ff\_na_{i,na,r} \qquad \begin{array}{l} i \in COM \\ r \in REG \end{array}$$

Consumption of *i* in the absence of taste changes: Equation *E_x3_imputed*

$$x3\_imputed_{i,r} = qhous_r + EPSIL_{i,r} \times \left(cnr_r - qhous_r\right) + \sum_{k \in COM} ETA_{i,k,r} \times p3_{k,r} \qquad \begin{array}{l} i \in COM \\ r \in REG \end{array}$$

Consumption of cross-classified FEDERAL-F /national accounts commodities: Equation *E_x3_ff_na*

$$x3\_ff\_na_{i,na,r} = x3\_imputed_{i,r} + ai_i + a3shift_{i,r} + a3ncom_{na,r} \qquad \begin{array}{l} i \in COM \\ na \in NCOM \\ r \in REG \end{array}$$

Link between national accounts and FEDERAL-F consumption: Equation *E_a3shift*

$$x\_hous_{i,r} = x3\_na\_i_{i,r} \qquad \begin{array}{l} i \in COM \\ r \in REG \end{array}$$

Commodity *i* augmenting technical change in household preferences: Equation *E_a3*

$$a3_{k,r} = f\_a3\_kr_{k,r} + f\_a3\_k_k \qquad \begin{array}{l} k \in COM \\ r \in REG \end{array}$$

Nominal disposable income of the residents of region *r*: Equation *E_n_dinc*

$$\left[XGROSS_r - R\_TAXSUM_r\right] \times n\_dinc_r = XGROSS_r \times n\_ginc_r - R\_TAXSUM_r \times dtax_r \qquad r \in REG$$

Household nominal gross income: Equation *E_n_ginc*

$$\begin{aligned}
&\mathrm{XGROSS}_r \times n_ginc_r = \\
&\sum_{m\in OCC}\sum_{j\in IND}\left[\mathrm{MU1}_{m,j,r} + \mathrm{MU2}_{m,j,r}\right]\times\left(prewage_{m,j,r} + x_lab_{m,j,r}\right)+ \\
&\mathrm{R_GROSSRENT}_r \times p_r_grossrent_r + \\
&\mathrm{OXX3}_r \times\left(pcost + oxcost_r\right)+ \mathrm{HOUS_PHANT}_r \times p_housphant_r + \\
&\left[\mathrm{FOR_NET_INT}_r \times \mathrm{PHI}\right]\times net_f_int_dc_r + \\
&\left[\mathrm{OHHNI}_r \times \mathrm{PHI}\right]\times\left(ex_hhnfi_r + x_rate\right)
\end{aligned} \qquad r \in \mathrm{REG}$$

Net direct taxes paid by, and transfers to, region *r* residents: Equation *E_dtax*

$$\begin{aligned}
&\mathrm{R_TAXSUM}_r \times dtax_r = \mathrm{R_NETKTAX}_r \times p_r_kaptax_r \\
&+ \mathrm{TPAYE}_r \times b41r_r + \mathrm{TDOTHER}_r \times b34r_r + \mathrm{CGR7}_r \times b47 \\
&+ \mathrm{SGR8}_r \times b38r_r - \mathrm{CGO3}_r \times\left(punb + x_unemp_r\right) \\
&- \mathrm{CGO5}_r \times \mathrm{t62}_r - \mathrm{SGO3}_r \times t51_r
\end{aligned} \qquad r \in \mathrm{REG}$$

Gross capital rentals accruing to household type *k*: Equation *E_pkgrossrent*

$$\begin{aligned}
&\mathrm{K_GROSSRENT}_k \times p_k_grossrent_k = \\
&\sum_{j\in IND}\sum_{r\in REG} \mathrm{K_GROSSLAND}_{k,j,r} \times\left(pprim_{land,j,r} + n_agland_{j,r}\right)+ \\
&\sum_{j\in IND}\sum_{r\in REG} \mathrm{K_GROSSCAP}_{k,j,r} \times\left(pprim_{capital,j,r} + cap_at_t_{j,r}\right)
\end{aligned} \qquad k \in \mathrm{REG}$$

Gross capital rentals accruing to residents of *r*: Equation *E_p_r_grossrent*

$$\begin{aligned}
&\mathrm{R_GROSSRENT}_r \times p_r_grossrent_r = \\
&\sum_{k\in REG}\left[\mathrm{K_GROSSRENT}_k \times \mathrm{SHARE_KR}_{k,r}\right]\times p_k_grossrent_k
\end{aligned} \qquad r \in \mathrm{REG}$$

Capital taxes paid by household type *k*: Equation *E_pkaptax*

$$\begin{aligned}
&\mathrm{K_NETKTAX}_k \times p_k_kaptax_k = \\
&\sum_{r\in REG}\left[\left(\frac{1}{3}\right)\times \mathrm{MV3}_{k,\,\mathrm{Dwellings},r}\right]\times rltax_r + \\
&\sum_{j\in IND}\sum_{r\in REG} \mathrm{KTDCOM}_{j,r,k} \times\left(pcom_tax_{j,r} + cap_at_t_{j,r}\right)+ \\
&\sum_{j\in IND}\sum_{r\in REG} \mathrm{MV2}_{k,j,r} \times\left(p_kaptax_{j,r} + cap_at_t_{j,r}\right)+ \\
&\mathrm{MW2}_{k,j,r} \times\left(p_landtx_{j,r} + n_agland_{j,r}\right)
\end{aligned} \qquad k \in \mathrm{REG}$$

Capital and land taxes paid by residents of region *r*: Equation *E_prkaptax*

$$\mathrm{R\_NETKTAX}_r \times p\_r\_kaptax_r = \sum_{k \in EG} \left[\mathrm{K\_NETKTAX}_k \times \mathrm{SHARE\_KR}_{k,r}\right] \times p\_k\_kaptax_k \qquad r \in REG$$

Nominal regional consumption: Equation *E_cnr*

$$cnr_r = n\_dinc_r + f\_apc_r + f\_eq19 \qquad r \in REG$$

Real regional consumption spending: Equation *E_crR*

$$crR_r = cnr_r - p3reg_r \qquad r \in REG$$

Real national consumption spending: Equation *E_cR*

$$cR = \sum_{r \in REG} \mathrm{CS}_r \times crR_r$$

Change in the foreign currency value of net foreign assets held by household *r*: Equation *E_del_netf*

$$del\_netf_r = \mathrm{FOR\_INV}_r \times del\_unityrF \qquad r \in REG$$

Net foreign interest receipts by household *r*, foreign currency value: Equation *E_net_f_int*

$$net\_f\_int_r = \left[100 / \mathrm{FOR\_NASSET}_r\right] \times del\_netf_r + os\_int \qquad r \in REG$$

Net foreign interest payments by household *r*, $A value: Equation *E_net_f_int_dc*

$$net\_f\_int\_dc_r = net\_f\_int_r + x\_rate \qquad r \in REG$$

Percent change in quantity of capital in regional industry *j,r* owned by household *t*: Equation *E_k_owners1*

$$qk\_owners_{t,j,r} = \left[100 \times \mathrm{QNET\_I\_TOT}_t / \mathrm{QCAP\_OWN\_T}_t\right] \times del\_own\_H \qquad t \in REG,\ j \in IND,\ r \in REG$$

Percent change in quantity of capital in regional industry *j,r* owned by regional government 1: Equation *E_k_owners2*

$$qk\_owners_{sgov\,j,A1} = \left[100 \times \mathrm{QNET\_I\_TOT}_{sgov1} / \mathrm{QCAP\_OWN\_T}_{sgov1}\right] \times del\_own\_H \qquad j \in IND$$

Percent change in quantity of capital in regional industry *j,r* owned by regional government 2: Equation *E_k_owners3*

$$qk\_owners_{sgov,j,A2} = \left[100 \times \text{QNET\_I\_TOT}_{sgov2} / \text{QCAP\_OWN\_T}_{sgov2}\right] \times del\_own\_H \qquad j \in IND$$

Percent change in quantity of capital in regional industry *j,r* owned by Commonwealth government: Equation *E_k_owners4*

$$qk\_owners_{cgov,j,r} = \left[100 \times \text{QNET\_I\_TOT}_{cgov} / \text{QCAP\_OWN\_T}_{cgov}\right] \times del\_own\_H \qquad j \in IND,\ r \in REG$$

Percent change in region 1 capital ownership by foreign owners: Equation *E_k_owners5A*

$$\begin{aligned} &\text{QCAP\_OWN\_TJR}_{row,j,A1} \times qk\_owners_{row,j,A1} = \\ &\text{QCAPatT}_{j,A1} \times cap\_at\_t_{j,A1} - \\ &\sum_{t \in REG} \text{QCAP\_OWN\_TJR}_{t,j,A1} \times qk\_owners_{t,j,A1} - \\ &\text{QCAP\_OWN\_TJR}_{sgov1,j,A1} \times qk\_owners_{sgov,j,A1} - \\ &\text{QCAP\_OWN\_TJR}_{cgov,j,A1} \times qk\_owners_{cgov,j,A1} \end{aligned} \qquad j \in IND$$

Percent change in region 2 capital ownership by foreign owners: Equation *E_k_owners5B*

$$\begin{aligned} &\text{QCAP\_OWN\_TJR}_{row,j,A2} \times qk\_owners_{row,j,A2} = \\ &\text{QCAPatT}_{j,A2} \times cap\_at\_t_{j,A2} - \\ &\sum_{t \in REG} \text{QCAP\_OWN\_TJR}_{t,j,A2} \times qk\_owners_{t,j,A2} - \\ &\text{QCAP\_OWN\_TJR}_{sgov2,j,A2} \times qk\_owners_{sgov,j,A2} - \\ &\text{QCAP\_OWN\_TJR}_{cgov,j,A2} \times qk\_owners_{cgov,j,A2} \end{aligned} \qquad j \in IND$$

Percent change in the share of capital in regional industry *j,r* owned by owner type *t*: Equation *E_fsk_owners*

$$sk\_owners_{t,j,r} = qk\_owners_{t,j,r} - cap\_at\_t_{j,r} + fsk\_owners_{t,j,r} \qquad t \in OWNERS,\ j \in IND,\ r \in REG$$

Nominal household gross savings: Equation *E_n_sav*

$$\text{SAVINGS}_r \times n\_sav_r = \left[\text{XGROSS}_r - \text{R\_TAXSUM}_r\right] \times n\_dinc_r - \text{CON\_R}_r \times n3reg_r \qquad r \in REG$$

Used to determine household consumption prices exogenously: Equation *E_p3shift*

$$p3_{i,r} = p3\_na\_i_{i,r} \qquad \begin{array}{l} i \in \text{COM} \\ r \in \text{REG} \end{array}$$

Used to determine household consumption prices exogenously: Equation *E_ffp3r*

$$p3r_{i,s,r} = fp3r_{i,r} + ffp3r_{i,s,r} \qquad \begin{array}{l} i \in \text{COM} \\ s \in \text{REG} \\ r \in \text{REG} \end{array}$$

Price of FEDERAL-F/national accounts commodities related to price of FEDERAL-F commodities: Equation *E_p3ncom*

$$\left(p3ncom_{na,r} + f\_p3r_r + f\_p3gen\right) = \sum_{i \in \text{COM}} \text{SMMI}_{i,na,r} \times p3\_ff\_na_{i,na,r} \qquad \begin{array}{l} na \in \text{NCOM} \\ r \in \text{REG} \end{array}$$

Price of FEDERAL-F commodities related to price of FEDERAL-F /national accounts commodities: Equation *E_p3_na_i*

$$p3\_na\_i_{i,r} = \sum_{na \in \text{NCOM}} \text{SMMNA}_{i,na,r} \times p3\_ff\_na_{i,na,r} \qquad \begin{array}{l} i \in \text{COM} \\ r \in \text{REG} \end{array}$$

Price of cross-classified FEDERAL-F /national accounts commodities: Equation *E_p3_ff_na*

$$p3\_ff\_na_{i,na,r} = p3shift_{i,r} + fp3ncom_{na,r} \qquad \begin{array}{l} i \in \text{COM} \\ na \in \text{NCOM} \\ r \in \text{REG} \end{array}$$

Economy-wide collection of phantom taxes on purchases by households: Equation *E_phant3natB*

$$\left[\sum_{i \in \text{COM}} \sum_{s \in \text{REG}} \sum_{r \in \text{REG}} \text{TAX3F}_{i,s,r}\right] \times phant3nat = \sum_{i \in \text{COM}} \sum_{s \in \text{REG}} \sum_{r \in \text{REG}} \text{TAX3F}_{i,s,r} \times \left(tax\_3ph_{i,s,r} + xr\_hous_{i,s,r}\right)$$

5. RATES OF RETURN, INVESTMENT AND CAPITAL ACCUMULATION

FEDERAL comparative static rate of return definition: Equation *E_crates*

$$crates_{j,r} = \mathrm{QSH1}_{j,r} \times \left(p1cap_{j,r} - pi_{j,r}\right) \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

FEDERAL comparative static relationship between rates of return and capital growth: Equation *E_cap_at_tplus1*

$$crates_{j,r} = \mathrm{BETA}_{j,r} \times \left(cap\_at\_tplus1_{j,r} + cap\_at\_t_{j,r}\right) + omega + f\_Eqn54_{j,r} \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

Capital at the beginning of the simulation year: Equation *E_del_f_ac_p_y*

$$\begin{aligned} &\left[\mathrm{QCAPatT}_{j,r} + \mathrm{TINY}\right] \times cap\_at\_t_{j,r} = \\ &100 \times \left[\mathrm{QINV\_BASE}_{j,r} - \mathrm{DEP}_{j,r} \times \mathrm{QCAPatT\_BASE}_{j,r}\right] \\ &\times del\_unityr_r + 100 \times del\_f\_ac\_p\_y_{j,r} \end{aligned} \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

Capital accumulation across the simulation year: Equation *E_y_p56*

$$\begin{aligned} &\left[\mathrm{QCAPatTPLUS1}_r + \mathrm{TINY}\right] \times cap\_at\_tplus1_r = \\ &\left[1 - \mathrm{DEP}_r\right] \times \mathrm{QCAPatT}_r \times cap\_at\_t_r + \mathrm{QINVEST}_{jr} \times y\_p56_{jr} \end{aligned} \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

Shock to start-of-year asset prices in year-on-year simulations: Equation *E_pcapatt*

$$\begin{aligned} &\mathrm{PCAP\_AT\_T}_{j,r} \times pcapatt_{j,r} = \\ &100 \times \left[\mathrm{PCAP\_AT\_T1\_B}_{j,r} - \mathrm{PCAP\_AT\_T\_B}_{j,r}\right] \times del\_unityr_r \end{aligned} \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

End of year asset prices of capital in regional industry *j,r*: Equation *E_pcapatt1*

$$\begin{aligned} &\mathrm{PCAP\_AT\_T1}_{j,r} \times pcapatt1_{j,r} = \\ &\left[1 + 0.5\right] \times \left[\mathrm{PCAP\_J}_{j,r} \times \left(\frac{\mathrm{PCAP\_J}_{j,r}}{\mathrm{PCAP\_J\_B}_{j,r}}\right)^{(0.5)}\right] \times pi_{j,r} \\ &+ 100 \times \left(\mathrm{PCAP\_J\_B}_{j,r} - \mathrm{PCAP\_AT\_T1\_B}_{j,r}\right) \times del\_unityr_r \end{aligned} \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

Investment/capital ratios by industry: Equation *E_r_inv_cap*

$$y\_p56_{j,r} = cap\_at\_t_{j,r} + r\_inv\_cap_{j,r} + f\_inv\_capr_r + f\_inv\_cap\_u \qquad \begin{array}{l} j \in \mathrm{IND} \\ r \in \mathrm{REG} \end{array}$$

Capital growth rate across the simulation year: Equation *E_del_k_gr*

$$del\_k\_gr_{j,r} = \left[\left[\text{QCAPatTPLUS1}_{j,r} / \text{QCAPatT}_{j,r} \right] / 100 \right] \times \left(cap\_at\_tplus1_{j,r} - cap\_at\_t_{j,r} \right)$$

j ∈ IND
r ∈ REG

Equilibrium expected rate of return: Equation *E_d_eeqror*

$$d\_eror_{j,r} = d\_eeqror_{j,r} + d\_diseq_{j,r}$$

j ∈ IND
r ∈ REG

The expected rate of return is the static expectations expected rate of return: Equation *E_d_eror*

$$d\_eror_{j,r} = del\_ror\_se_{j,r}$$

j ∈ IND
r ∈ REG

Change in equilibrium expected rate of return in the simulation year: Equation *E_d_f_eeqror_jr*

$$del\_k\_gr_{j,r} = \text{KGR\_COEFF}_{j,r} \times \left(d\_eeqror_{j,r} - d\_f\_eeqror\_jr_{j,r} - d\_f\_eegror\_j_j - d\_f\_eeqror\_r_r - d\_f\_eeqror \right)$$

j ∈ IND
r ∈ REG

Closure of residuals in rates of return: Equation *E_d_diseq*

$$d\_diseq_{j,r} = -\left[\text{ADJ\_COEFF}_{j,r} \times \text{DISEQ\_B}_{j,r} \right] \times del\_unityr2_r + d\_f\_diseq_{j,r}$$

j ∈ IND
r ∈ REG

For viewing the values of CHKGR1 in solution results: Equation *E_ch_kgr1*

$$ch\_kgr1_{j,r} = \text{CHKGR1}_{j,r} \times del\_unityr4$$

j ∈ IND
r ∈ REG

For viewing the values of CHKGR2 in solution results: Equation *E_ch_kgr2*

$$ch\_kgr2_{j,r} = \text{CHKGR2}_{j,r} \times del\_unityr4$$

j ∈ IND
r ∈ REG

Post-tax rental price of regional-industry specific capital: Equation *E_p1cap*

$$p1cap_{j,r} = \text{QSH2}_{j,r} \times \left[pprim_{capital,j,r} - \text{SP4}_{j,r} \times p\_kaptax_{j,r} - \text{SP7}_{j,r} \times pres\_tax_{j,r} - \text{SP8}_{j,r} \times pcom\_tax_{j,r} \right]$$

j ∈ IND
r ∈ REG

Changes in static expectations expected rates of return by industry: Equation *E_del_ror_se*

$$
\begin{aligned}
&\left[100 \times \text{VCAP\_AT\_T}_{j,r} \times \text{RINT\_PT\_SE}_{j,r}\right] \times del\_ror\_se_{j,r} = \\
&\left[\sum_{t \in \text{OWNERS}} \text{MV1}_{t,j,r}\right] \times p1cap_{j,r} + \left[\text{VCAP\_AT\_T}_{j,r} \times \left(1 - \text{DEP}_{j,r}\right)\right] \times pi_{j,r} + \\
&\left[\text{TAX\_K\_RATE}_{j,r} \times \text{VCAP\_AT\_T}_{j,r} \times \text{DEP}_{j,r}\right] \times \left(f\_kaptax_j + pi_{j,r}\right) - \\
&\left[\left[\sum_{t \in \text{OWNERS}} \text{MV1}_{t,j,r}\right] + \left[\text{VCAP\_AT\_T}_{j,r} \times \left[1 - \text{DEP}_{j,r}\right]\right] + \right. \qquad j \in \text{IND} \\
&\left.\left[\text{TAX\_K\_RATE}_{j,r} \times \text{VCAP\_AT\_T}_{j,r} \times \text{DEP}_{j,r}\right]\right] \times pi_{j,r} - \left[\left[\sum_{t \in \text{OWNERS}} \text{MV1}_{t,j,r}\right]\right. \qquad r \in \text{REG} \\
&+ \left[\text{VCAP\_AT\_T}_{j,r} \times \left[1 - \text{DEP}_{j,r}\right]\right] + \left[\text{TAX\_K\_RATE}_{j,r}\right. \\
&\left.\left.\times \text{VCAP\_AT\_T}_{j,r}\right] \times \text{DEP}_{j,r}\right] \times \left[100 / \text{RINT\_PT\_SE}_{j,r}\right] \times d\_rint\_pt\_se_{j,r}
\end{aligned}
$$

Changes in real post-tax rate of interest static expectations: Equation *E_d_rint_pt_se*

$$
\begin{aligned}
&100 \times d\_rint\_pt\_se_{j,r} = \left[\ 1/\left[1 + \text{INF}\right]\ \right] \times \left[\ 100 \times \left[1 - \text{TAX\_K\_RATE}_{j,r}\right]\right. \qquad j \in \text{IND} \\
&\left.\times d\_int - \left[\text{INT} \times \text{TAX\_K\_RATE}_{j,r}\right] \times f\_kaptax_j\right. \qquad r \in \text{REG} \\
&\left. - \left[\ 100 \times 1/\left[1 + \text{INF}\right] \times \left[\ 1 + \text{INT} \times \left[1 - \text{TAX\_K\_RATE}_{j,r}\right]\ \right]\ \right] \times d\_inf\ \right]
\end{aligned}
$$

Nominal rate of interest: Equation *E_d_int*

$$d\_int = \left[1 + \text{INF}\right] \times d\_rint + \left[1 + \text{RINT}\right] \times d\_inf$$

Change in the rate of inflation: Equation *E_d_inf*

$$100 \times d\_inf = \left[1 + \text{INF}\right] \times \left(p3nat - cpi\_l\right)$$

Lagged value of the CPI for year *t-1*: Equation *E_cpi_l*

$$
\begin{aligned}
&\text{LEV\_CPI\_L} \times cpi\_l = \\
&100 \times \left[\text{LEV\_CPI\_B} - \text{LEV\_CPI\_L\_B}\right] \times del\_cpi\_l + 100 \times d\_f\_cpi\_l
\end{aligned}
$$

Capital formation in regional industry *j,r*: Equation *E_y_kap*

$$
\begin{aligned}
&y\_p56_{j,r} = \text{PRINSH}_{j,r} \times y\_kap_{j,r} \qquad j \in \text{IND} \\
&+\ \text{CINSH}_{j,r} \times y\_cgk_{j,r} + \text{SINSH}_{j,r} \times y\_sgk_{j,r} \qquad r \in \text{REG}
\end{aligned}
$$

Real investment for industries in the set XIND: Equation *E_y_sr*

$$\left[\sum_{j\in SNO_s} VINVEST_{j,r}\right]\times\left(y\_sr_{s,r}+yshift\right)=\sum_{j\in SNO_s} VINVEST_{j,r}\times y\_p56_{j,r} \qquad \begin{array}{l} s\in XIND \\ r\in REG \end{array}$$

Real investment for regional industries in the set INDT (Tasmanian sectoral investments): Equation *E_y_tr*

$$\left[\sum_{k\in INVNOT_t} VINVEST_{k,r}\right]\times\left(y\_tr_{t,r}+yshift\right)=\sum_{j\in INVNOT_t} VINVEST_{j,r}\times y\_p56_{j,r} \qquad \begin{array}{l} t\in INDT \\ r\in REG \end{array}$$

Real investment for national investment sectors: Equation *E_y_s*

$$\left[\sum_{r\in REG}\sum_{j\in SNO_s} VINVEST_{jr}\right]\times y\_s_s=\sum_{r\in REG}\left[\sum_{j\in SNO_s} VINVEST_{j,r}\right]\times y\_sr_{s,r} \qquad s\in XIND$$

Economy-wide gross fixed capital formation in industry *j*: Equation *E_y_nat*

$$\left[\sum_{t\in REG} VINVEST_{j,t}\right]\times y\_nat_j=\sum_{r\in REG} VINVEST_{jr}\times y\_p56_{jr} \qquad j\in IND$$

Link between exogenous regional sectoral investment categories and FEDERAL-F regional industry investment: Equation *E_fy_p56*

$$y\_p56_{jr}=fy\_p56_{jr}+\sum_{s=JNO_j}^{JNO_j} fy\_sr_{s,r} \qquad \begin{array}{l} j\in IND \\ r\in REG \end{array}$$

Option 1 link between exogenous investment categories (Tasmanian sectoral investments) and FEDERAL-F investment categories: Equation *E_fyt_p56*

$$y\_p56_{j,r}=fyt\_p56_{j,r}+\sum_{t=IVNOT_j}^{IVNOT_j} fy\_tr_{t,r} \qquad \begin{array}{l} j\in IND \\ r\in REG \end{array}$$

Link between exogenous national sectoral investment categories and FEDERAL-F national industry investment: Equation *E_fy_nat*

$$y\_nat_j=fy\_nat_j+\sum_{s=JNO_j}^{JNO_j} fy\_s_s \qquad j\in IND$$

Option 2 link between exogenous regional sectoral investment and FEDERAL-F investment: Equation *E_fd_f_eeqror_jr*

$$d\_f\_eeqror\_jr_{j,r} = fd\_f\_eeqror\_jr_{j,r} + \sum_{s=JNO_j}^{JNO_j} fy\_sr_{s,r} \qquad \begin{array}{l} j \in IND \\ r \in REG \end{array}$$

Option 2 link between exogenous national sectoral investment and FEDERAL-F investment: Equation *E_fd_f_eeqror_j*

$$d\_f\_eeqror\_j_j = fd\_f\_eeqror\_j_j + \sum_{s=JNO_j}^{JNO_j} fy\_s_s \qquad j \in IND$$

Option 2 link between exogenous regional sectoral investments (Tasmanian sectoral investments) and FEDERAL-F investment: Equation *E_tfd_f_eeqror_jr*

$$d\_f\_eeqror\_jr_{j,r} = tfd\_f\_eeqror\_jr_{j,r} + \sum_{t=IVNOT_j}^{IVNOT_j} fy\_tr_{t,r} \qquad \begin{array}{l} j \in IND \\ r \in REG \end{array}$$

Input demands for capital creation: domestic source: Equation *E_x2A*

$$\begin{aligned} x2_{i,s,j,r} &= y\_p56_{j,r} - ZIG2_{i,s,j,r} \times \\ &\left\{ p2_{i,s,j,r} + a2isjr_{i,s,j,r} - \sum_{t \in SOU} SHSTAR2_{i,t,j,r} \times \left(p2_{i,t,j,r} + a2isjr_{i,t,j,r} \right) \right\} \\ &+ a\_in2_{j,r} + a2isjr_{i,s,j,r} \\ &- twist2_{i,s,j,r} - \Big[SOURCEDOM2_s - SH2_{i,A1,j,r} \; / \\ &\left[SH2_{i,A1,j,r} + SH2_{i,A2,j,r} \right] \Big] \times twist\_is2_{i,j,r} \end{aligned} \qquad \begin{array}{l} i \in COM \\ s \in REG \\ j \in IND \\ r \in REG \end{array}$$

Input demands for capital creation: foreign sourcing: Equation *E_x2B*

$$\begin{aligned} x2_{i,RoW,j,r} &= y\_p56_{j,r} - ZIG2_{i,RoW,j,r} \times \\ &\left\{ p2_{i,RoW,j,r} + a2isj_{i,RoW,j,r} - \sum_{t \in SOU} SHSTAR2_{i,t,j,r} \times \left(p2_{i,t,j,r} + a2isjr_{i,t,j,r} \right) \right\} \\ &+ a\_in2_{j,r} + a2isjr_{i,RoW,j,r} - twist2_{i,RoW,j,r} \end{aligned} \qquad \begin{array}{l} i \in COM \\ j \in IND \\ r \in REG \end{array}$$

Technical change in source-specific commodity usage for capital creation: Equation *E_a2isjr*

$$a2isjr_{i,s,j,r} = f\_a\_mat2_{i,s,j,r} + ai_i + ais_{i,s} \qquad \begin{array}{l} i \in COM \\ s \in SOU \\ j \in IND \\ r \in REG \end{array}$$

National private investment budget: Equation *E_i_wide*

$$\sum_{j\in JSET}\sum_{r\in REG} T\_PI_{j,r}\times\left(pi_{j,r}+y\_kap_{j,r}\right)=\left[\sum_{j\in JSET}\sum_{r\in REG} T\_PI_{j,r}\right]\times i\_wide$$

Regional private investment budget: Equation *E_i_priv*

$$\sum_{j\in JSET} T\_PI_{j,r}\times\left(pi_{j,r}+y\_kap_{j,r}\right)=\left[\sum_{j\in JSET} T\_PI_{j,r}\right]\times i\_priv_r \qquad r\in REG$$

Australian aggregate investment budget: Equation *E_i_aust*

$$\sum_{j\in IND}\sum_{r\in REG}\Big[\ T\_CG_{j,r}\times\left(pi_{j,r}+y\_cgk_{j,r}\right)+T\_SG_{j,r}\times\left(pi_{j,r}+y\_sgk_{j,r}\right)$$
$$+T\_SY_{j,r}\times\left(pi_{j,r}+y\_kap_{j,r}\right)\Big]=i\_aust$$

Region *r* private investment price index: Equation *E_ipi_r*

$$ipi\_r_r=\sum_{j\in JSET}\left[\left(T\_PI_{j,r}\Big/\left(\sum_{k\in JSET}T\_PI_{k,r}\right)\right)\times pi_{j,r}\right] \qquad r\in REG$$

National private investment price index: Equation *E_ipi*

$$ipi=\sum_{r\in REG}\left[\left[\sum_{k\in JSET}T\_PI_{k,r}\right]\Big/\left[\sum_{t\in REG}\sum_{k\in JSET}T\_PI_{k,t}\right]\right]\times ipi\_r_r$$

Real regional private investment budget: Equation *E_i_rr*

$$i\_rr_r = i\_priv_r - ipi\_r_r \qquad r\in REG$$

Real national private investment budget: Equation *E_i_real*

$$i\_real = i\_wide - ipi$$

Real national investment budget: Equation *E_i_aust_R*

$$i\_aust\_R = i\_aust - p2nat$$

6. REGIONAL GOVERNMENT FINANCES

Nominal PSBR of region *r* government: Equation *E_cb1r*

$$100 \times cb1r_r = \text{B5\_R}_r \times b5r_r - \text{B3\_R}_r \times sgrev\_tot \qquad r \in REG$$

Real PSBR of region *r* government: Equation *E_real_cb1r*

$$100 \times real\_cb1r_r = \text{B5\_R}_r \times b5r_r - \text{B3\_R}_r \times sgrev\_tot_r - [\text{B5\_R}_r - \text{B3\_R}_r] \times p5reg_r \qquad r \in REG$$

Regional government outlays: Equation *E_b5r*

$$b5r_r = \sum_{i \in COM} \sum_{s \in SOU} \left[\text{S51}_{i,s,r} \times (p\_sgov_{i,s,r} + x\_sg_{i,s,r}) \right] + \sum_{i \in IND} \left[\text{S52}_{i,r} \times (pi_{i,r} + y\_sgk_{i,r}) \right] + \text{S53}_r \times t51_r + \text{S54}_r \times (net\_os\_r_r + x\_rate) + \text{S55}_r \times (res\_out_r + x\_rate) \qquad r \in REG$$

Revenue of regional government *r*: Equation *E_sgrev_tot*

$$\begin{aligned} sgrev\_tot_r &= \text{S\_SGREC}_{1,r} \times sgptr_r \\ &+ \text{S\_SGREC}_{2,r} \times rltax_r + \text{S\_SGREC}_{3,r} \times cltax_r \\ &+ \text{S\_SGREC}_{4,r} \times b34r_r + \text{S\_SGREC}_{5,r} \times b35r_r \\ &+ \text{S\_SGREC}_{6,r} \times b36r_r + \text{S\_SGREC}_{7,r} \times b37r_r \\ &+ \text{S\_SGREC}_{8,r} \times b38r_r + \text{S\_SGREC}_{9,r} \times sgbedpi_r \\ &+ \text{S\_SGREC}_{10,r} \times (r\_rcpts_r + x\_rate) \\ &+ \text{S\_SGREC}_{11,r} \times phant\_rgov_r \end{aligned}$$

Regional government payroll tax receipts: Equation *E_sgptr*

$$sgptr_r = \sum_{m \in OCC} \sum_{j \in IND} \text{ROLL\_SK}_{m,j,r} \times (p\_roll_{m,j,r} + x\_lab_{m,j,r}) \qquad r \in REG$$

Regional government residential land tax receipts: Equation *E_rltax*

$$rltax_r = pres\_tax_{Dwellings,r} + cap\_at\_t_{Dwellings,r} \qquad r \in REG$$

Regional government commercial land tax receipts: Equation *E_cltax*

$$cltax_r = \sum_{j \in IND} \text{B\_COM}_{j,r} \times (pcom\_tax_{j,r} + cap\_at\_t_{j,r}) \qquad r \in REG$$

Regional government income reducing taxes: Equation *E_b34r*

$$b34r_r = \mathrm{H34R}_r \times n\_ginc_r + f\_ytax_r + tax\_shiftr_r \qquad r \in \mathrm{REG}$$

Transfers from the Commonwealth Government to the regional governments: Equation *E_b35r*

$$b35r_r = t61_r \qquad r \in \mathrm{REG}$$

Regional government commodity tax receipts: Equation *E_b36r*

$$\begin{aligned}&[\mathrm{SGR6}_r + \mathrm{TINY}] \times b36r_r = \\ &\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{t\in REG} \mathrm{BAS1}_{i,s,j,t,r} \times \left(g\_sint_{i,s,j,t,Int} + x1_{i,s,j,t}\right) + \\ &\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{t\in REG} \mathrm{BAS2}_{i,s,j,t,r} \times \left(g\_sint_{i,s,j,t,Kap} + x2_{i,s,j,r}\right) + \\ &\sum_{i\in COM}\sum_{s\in SOU}\sum_{t\in REG} \mathrm{TAX3}_{i,s,t,r} \times \left(g\_stax_{i,s,r} + xr\_hous_{i,s,r}\right)\end{aligned} \qquad r \in \mathrm{REG}$$

Regional government production tax receipts: Equation *E_b37r*

$$b37r_r = \sum_{j\in IND} \mathrm{B37\_R}_{j,r} \times \left(spptax_{j,r} + xsptax_{j,r}\right) \qquad r \in \mathrm{REG}$$

Other regional government receipts: Equation *E_b38r*

$$b38r_r = \mathrm{H38R}_r \times p3nat + f\_getr_r + tax\_shiftr_r \qquad r \in \mathrm{REG}$$

Returns from regional government business enterprises: Equation *E_sgbedpi*

$$\left[\sum_{k\in IND} \mathrm{MV1}_{Sgov,k,r}\right] \times sgbedpi_r = \sum_{j\in IND} \mathrm{MV1}_{Sgov,j,r} \times \left(p1cap_{j,r} + cap\_at\_t_{j,r}\right) \qquad r \in \mathrm{REG}$$

Foreign currency value of residual regional government receipts: Equation *E_r_rcpts*

$$r\_rcpts_r = f\_r\_rcpts_r - fni\_shift_r \qquad r \in \mathrm{REG}$$

Regional government current consumption spending: Equation *E_x_sg*

$$x\_sg_{i,s,r} = x\_sgcon_{i,s,r} + f\_x\_sg_r + exp\_shiftr_r + f\_govcon\_gen \qquad \begin{matrix} i \in \mathrm{COM} \\ s \in \mathrm{SOU} \\ r \in \mathrm{REG} \end{matrix}$$

Regional government gross fixed capital expenditure: Equation *E_y_sgk*

$$y\_sgk_{j,r} = f\_y\_sgk_{j,r} + f\_sg\_invest_{r} + exp\_shiftr_{r} \qquad \begin{array}{l} j \in IND \\ r \in REG \end{array}$$

Regional government transfers to persons: Equation *E_t51*

$$t51_{r} = H5R\_1_{r} \times p3nat + f\_transr_{r} + exp\_shiftr_{r} \qquad r \in REG$$

Foreign currency value of residual regional government outlays: Equation *E_res_out*

$$res\_out_{r} = fres\_out_{r} + fni\_shift_{r} \qquad r \in REG$$

Specific and general determination of sales tax rate on industrial users: Equation *E_ts0_ind*

$$ts0\_ind_{i,s,r,k} = salestax_{r} + fts0\_ind_{i,s,r,k} \qquad \begin{array}{l} i \in COM \\ s \in SOU \\ r \in REG \\ k \in PUR \end{array}$$

Specific and general determination of sales tax rates on household purchases: Equation *E_ts_hous*

$$ts\_hous_{i,s,r} = salestax_{r} + fts\_hous_{i,s,r} \qquad \begin{array}{l} i \in COM \\ s \in SOU \\ r \in REG \end{array}$$

Regional government production tax: Equation *E_spptax*

$$spptax_{j,r} = HP\_2_{j,r} \times p3reg_{r} + fprodrj_{j,r} + fprodr_{r} + tax\_shiftr_{r} \qquad \begin{array}{l} j \in IND \\ r \in REG \end{array}$$

Regional government residential land taxes: Equation *E_pres_tax*

$$pres\_tax_{j,r} = H\_RES_{r} \times pprim_{capital,j,r} + fres\_tax_{r} + tax\_shiftr_{r} \qquad \begin{array}{l} j \in IND \\ r \in REG \end{array}$$

Regional government commercial land taxes: Equation *E_pcom_tax*

$$pcom\_tax_{j,r} = H\_BUS_{j,r} \times pprim_{capital,j,r} + fcom\_tax_{j,r} + fcom\_taxr_{r} + tax\_shiftr_{r} \qquad \begin{array}{l} j \in IND \\ r \in REG \end{array}$$

Regional government sales taxes on inputs to current production and capital creation: Equation *E_g_sint*

$$g\_sint_{i,s,j,r,k} = \text{DEX1\_1}_{i,s,j,r,k} \times p3reg_r + \text{DEX1\_2}_{i,s,j,r,k} \times \left(ts0\_ind_{i,s,r,k} + p\_basic_{i,s}\right) + \text{DEX1\_3}_{i,s,j,r,k} \times vs0\_ind_i$$

i ∈ COM
s ∈ SOU
j ∈ IND
r ∈ REG
k ∈ PUR

Regional taxes per unit of household purchases: Equation *E_g_stax*

$$g\_stax_{i,s,r} = \text{DEX3\_1}_{i,s,r} \times p3reg_r + \text{DEX3\_2}_{i,s,r} \times \left(ts\_hous_{i,s,r} + p\_basic_{i,s}\right) + \text{DEX3\_3}_{i,s,r} \times vs\_hous_{i,s,r}$$

i ∈ COM
s ∈ SOU
r ∈ REG

Regional government debt to GRP ratio: Equation *E_debt_grp*

$$debt\_gsp\_tl_r = debtr\_tl_r - r\_grpe_r$$

r ∈ REG

Uniform regional government shifts in taxes: Equation *E_tax_shiftr*

$$tax\_shiftr_r = f\_tax\_shiftr_r + n\_shift_r$$

r ∈ REG

Uniform regional government shifts in outlays: Equation *E_exp_shiftr*

$$exp\_shiftr_r = f\_exp\_shiftr_r - n\_shift_r$$

r ∈ REG

Change in the foreign currency value of regional government *r*'s debt at time *t*: Equation E_debtr

$$del\_debtr_r = \text{PSBR\_R\_FC}_r \times del\_unityr3_r$$

r ∈ REG

Percentage change in the foreign currency value of the debt of regional government *r*, *t*+1: Equation *E_debtr_t1*

$$debtr\_tl_r = \left[100 \Big/ \left(\text{OS\_DEBTR}_r + \frac{\text{PSBR\_R0}_r}{\text{PHI}}\right)\right] \times del\_debtr_r + \left[100/(\text{OS\_DEBTR}_r \times \text{PHI} + \text{PSBR\_R0}_r)\right] \times cb1r_r - \left[\text{PSBR\_R0}_r/(\text{OS\_DEBTR}_r \times \text{PHI} + \text{PSBR\_R0}_r)\right] \times x\_rate$$

r ∈ REG

Net foreign interest payments by regional government *r*: Equation *E_net_os_r*

$$net\_os\_r_r = \left[100/\text{OS\_DEBTR}_r\right] \times del\_debtr_r + os\_int\_r_r$$

r ∈ REG

The indexing of real regional government consumption spending to real household consumption spending: Equation *E_fx5reg*

$$x5reg_r = x3reg_r + fx5reg_r \qquad r \in REG$$

Real regional government investment expenditure: Equation *E_r_sginv*

$$r\_sginv_r = \sum_{i \in IND} SHSGINV_{i,r} \times y\_sgk_{i,r} \qquad r \in REG$$

The indexing of real regional investment spending to real regional private investment spending: Equation *E_fr_sginv*

$$r\_sginv_r = i\_rr_r + fr\_sginv_r \qquad r \in REG$$

7. COMMONWEALTH GOVERNMENT FINANCES

Commonwealth PSBR: Equation *E_cb2*

$$100 \times cb2 = \text{B\_SIX} \times b6 - \text{B\_FOUR} \times b4$$

Real Commonwealth borrowing requirement: Equation *E_real_cb2*

$$100 \times real\_cb2 = \text{B\_SIX} \times b6 - \text{B\_FOUR} \times b4 - [\text{B\_SIX} - \text{B\_FOUR}] \times p6nat$$

Aggregate Commonwealth Government outlays: Equation *E_b6*

$$b6 = \sum_{i \in COM} \sum_{s \in SOU} \left[\text{COUT\_1}_{i,s} \times (p\_cgov_{i,s} + x\_cg_{i,s}) \right] + \sum_{i \in IND} \sum_{r \in REG} \left[\text{COUT\_2}_{i,r} \times (pi_{i,r} + y\_cgk_{i,r}) \right] +$$
$$\sum_{r \in REG} \left[\text{COUT\_3}_{r} \times (punb + x\_unemp_{r}) \right] + \sum_{r \in REG} \text{COUT\_4}_{r} \times t61_{r} + \sum_{r \in REG} \text{COUT\_5}_{r} \times t62_{r} +$$
$$\text{COUT\_6} \times (net\_os\_f + x\_rate) + \text{COUT\_7} \times (t64 + x\_rate)$$

Aggregate Commonwealth Government receipts: Equation *E_b4*

$$b4 = \text{CREC\_1} \times b41 + \text{CREC\_2} \times b42 + \text{CREC\_3} \times b43 + \text{CREC\_4} \times b44$$
$$+ \text{CREC\_5} \times b45 + \text{CREC\_6} \times b46 + \text{CREC\_7} \times b47 + \sum_{r \in REG} \text{CREC\_8}_{r} \times cgbedpi_{r}$$
$$+ \text{CREC\_9} \times phant\_cgov$$

PAYE tax receipts by region: Equation *E_b41r*

$$b41r_{r} = \sum_{m \in OCC} \sum_{j \in IND} \text{B\_PAYE}_{m,j,r} \times (paye_{m,j,r} + x\_lab_{m,j,r}) \qquad r \in REG$$

Aggregate PAYE tax receipts: Equation *E_b41*

$$b41 = \sum_{r \in REG} \text{BR\_PAYE}_{r} \times b41r_{r}$$

Other Commonwealth income tax receipts by region: Equation *E_b42r*

$$b42r_{r} = \sum_{j \in IND} \sum_{t \in OWNERS} \Big\{ \text{BTJ\_INC}_{t,j,r} \times$$
$$[\text{BK\_INC}_{t,j,r} \times (p\_kaptax_{j,r} + cap\_at\_t_{j,r}) + \qquad r \in REG$$
$$\text{BL\_INC}_{t,j,r} \times (p\_landtx_{j,r} + n\_agland_{j,r})] \Big\}$$

Aggregate other Commonwealth income tax receipts: Equation *E_b42*

$$b42 = \sum_{r \in REG} BR\_INC_r \times b42r_r$$

Commonwealth government receipts from import duties: Equation *E_b43*

$$b43 = \sum_{i \in COM} B\_DUTY_i \times (g\_tar_i + x\_imp_i)$$

Commonwealth receipts from net production taxes: Equation *E_b44*

$$b44 = \sum_{j \in IND} \sum_{r \in REG} B\_CGP_{j,r} \times (cpptax_{j,r} + xcptax_{j,r})$$

Commonwealth receipts from net commodity taxes: Equation *E_b45*

$$b45 = \sum_{i \in COM} \sum_{s \in SOU} \sum_{j \in IND} \sum_{r \in REG} BC\_S12_{i,s,j,r,Int} \times (x1_{i,s,j,r} + g\_cint_{i,s,j,r,Int}) +$$
$$\sum_{i \in COM} \sum_{s \in SOU} \sum_{j \in IND} \sum_{r \in REG} BC\_S12_{i,s,j,r,Kap} \times (x2_{i,s,j,r} + g\_cint_{i,s,j,r,Kap}) +$$
$$\sum_{i \in COM} \sum_{s \in SOU} \sum_{r \in REG} BC\_S3_{i,s,r} \times (g\_ctax_{i,s,r} + xr\_hous_{i,s,r})$$

Commonwealth Government receipts from net export taxes: Equation *E_b46*

$$b46 = \sum_{i \in COM} \sum_{r \in REG} BC\_4H_{i,r} \times (g\_extax_{i,r} + xr\_exp_{i,r})$$

Other Commonwealth Government receipts: Equation *E_b47*

$$b47 = HOTHER\_C \times p3nat + f47$$

Real Commonwealth other receipts: Equation *E_b47R*

$$b47R = b47 - gdp\_def$$

Returns from Commonwealth Government business enterprises: Equation *E_cgbedpi*

$$\left[\sum_{k \in IND} MV1_{Cgov,k,r} \right] \times cgbedpi_r = \sum_{j \in IND} \left[MV1_{Cgov,j,r} \times (p1cap_{j,r} + cap\_at\_t_{j,r}) \right] \qquad r \in REG$$

Commonwealth current consumption spending: Equation *E_x_cg*

$$x\_cg_{i,s} = x\_cgcon_{i,s} + f\_x\_cg + f\_xr\_cg_s + f\_govcon\_gen \qquad i \in COM,\ s \in SOU$$

Specific and general determination of Commonwealth Government capital outlays: Equation *E_y_cgk*

$$y\_cgk_{j,r} = f\_y\_cgk_{j,r} + f\_fed\_cap + f\_fed\_capr_{r} \qquad \begin{matrix} j \in IND \\ r \in REG \end{matrix}$$

Unemployment benefits per person: Equation *E_punb*

$$punb = H\_BEN \times p3nat + fun\_b + f\_pbp$$

Commonwealth outlays on unemployment benefits: Equation *E_u_benefit*

$$u\_benefit = \sum_{r \in REG} \left\{ CGO3_{r} \; / \left[\sum_{t \in REG} CGO3_{t} \right] \times (punb + x\_unemp_{r}) \right\}$$

Commonwealth transfers to the states: Equation *E_t61r*

$$t61_{r} = HC\_4_{r} \times p3nat + f64r_{r} \qquad r \in REG$$

Total Commonwealth transfers (other than unemployment benefit payments): Equation *E_transfers*

$$transfers = \sum_{r \in REG} \left[CGO5_{r} / \sum_{t \in REG} CGO5_{t} \right] \times t62_{r}$$

Commonwealth transfers (other than unemployment benefit payments) to persons in region *r*: Equation *E_t62*

$$t62_{r} = HC\_5_{r} \times p3nat + f65r_{r} + f65 + f\_pbp \qquad r \in REG$$

Commonwealth Government outlays on personal benefits: Equation *E_pbp_nom*

$$\left[\sum_{r \in REG} (CGO3_{r} + CGO5_{r}) \right] \times pbp\_nom = \left[\sum_{r \in REG} CGO3_{r} \right] \times u\_benefit + \left[\sum_{r \in REG} CGO5_{r} \right] \times transfers$$

Commonwealth Government real outlays on personal benefits: Equation *E_pbp_real*

$$pbp\_real = pbp\_nom - gdp\_def$$

Specific and general determination of PAYE taxes: Equation *E_fpaye*

$$fpaye = fswitch\_paye + fcomm\_gen\_rev + f\_tff + ffpayer_r + f\_ngst$$

Specific and general determination of import duties: Equation *E_t3*

$$t3_i = fswitch\_t3_i + f\_t3 + fcomm\_gen\_rev + f\_tff + f\_ngst \qquad i \in COM$$

Specific and general determination of Commonwealth production taxes: Equation *E_fprodj*

$$fprodj_j = fswitch\_prodj_j + ffprod + fcomm\_gen\_rev + f\_tff + f\_ngst \qquad j \in IND$$

Specific and general determination of Commonwealth commodity taxes on inputs to current production and capital formation: Equation *E_tc0_ind*

$$tc0\_ind_{i,s,j,r,k} = fswitch\_tind_{i,s,j,r,k} + fi\_tc0\_ind_i + fj\_tc0\_ind_j + fk\_tc0\_ind_k + fcomm\_gen\_rev + com\_tax + f\_tff + int\_indtax + f\_ngst$$

i ∈ COM
s ∈ SOU
j ∈ IND
r ∈ REG
k ∈ PUR

Specific and general determination of Commonwealth household sales taxes: Equation *E_tc_hous*

$$tc\_hous_{i,s,r} = fswitch\_hous_{i,s,r} + fi\_tc\_hous_i + fir\_tc\_hous_{i,r} + fcomm\_gen\_rev + com\_tax + f\_tff$$

i ∈ COM
s ∈ SOU
r ∈ REG

Specific and general determination of export taxes: Equation *E_t4*

$$t4_{i,r} = fswitch\_t4_{i,r} + ft4 + fcomm\_gen\_rev + f\_tff + f\_ngst$$

i ∈ COM
r ∈ REG

Specific and general determination of other Commonwealth receipts: Equation *E_f47*

$$f47 = fswitch\_f47 + fcomm\_gen\_rev$$

Commonwealth revenue from taxes, fees, and fines: Equation *E_b1_6*

$$SUM\_TFF \times b1\_6 = CGR1 \times b41 + CGR2 \times b42 + CGR3 \times b43 + CGR4 \times b44 + CGR5 \times b45 + CGR6 \times b46$$

Commonwealth real revenue from taxes, fees, and fines: Equation *E_b1_6R*

$$b1\_6R = b1\_6 - gdp\_def$$

Per unit Commonwealth capital tax: Equation *E_p_kaptax*

$$p\_kaptax_{j,r} = \text{HOVE2}_j \times pprim_{capital,j,r} + f\_kaptax_j + f\_o\_it + f\_tff + fcomm\_gen\_rev + f\_ngst \qquad \begin{array}{l} j \in IND \\ r \in REG \end{array}$$

Commonwealth taxes on returns to land: Equation *E_p_landtx*

$$p\_landtx_{j,r} = \text{HOVE3}_j \times pprim_{Land,j,r} + f\_landtx_j + f\_o\_it + f\_tff + fcomm\_gen\_rev + f\_ngst \qquad \begin{array}{l} j \in IND \\ r \in REG \end{array}$$

Tariff per unit of imports: Equation *E_g_tar*

$$g\_tar_i = \text{H3\_1}_i \times p3nat + \text{H3\_2}_i \times (t3_i + pmp_i + x\_rate) + \text{H3\_3}_i \times v3_i \qquad i \in COM$$

Net export taxes per unit of exports: Equation *E_g_extax*

$$g\_extax_{i,r} = \text{H4\_1}_i \times p3nat + \text{H4\_2}_i \times (t4_{i,r} + p\_rexp_{i,r} + x\_rate) + \text{H4\_3}_i \times v4_{i,r} \qquad \begin{array}{l} i \in COM \\ r \in REG \end{array}$$

Commonwealth Government sales taxes on inputs to current production and capital creation: Equation *E_g_cint*

$$g\_cint_{i,s,j,k,r} = \text{DEX2\_1}_{i,s,j,r,k} \times p3nat + \text{DEX2\_2}_{i,s,j,r,k} \times (tc0\_ind_{i,s,j,r,k} + p\_basic_{i,s}) + \text{DEX2\_3}_{i,s,j,r,k} \times vc0\_ind_i \qquad \begin{array}{l} i \in COM \\ s \in SOU \\ j \in IND \\ k \in PUR \\ r \in REG \end{array}$$

Commonwealth taxes per unit of household purchases: Equation *E_g_ctax*

$$g\_ctax_{i,s,r} = \text{DEX32\_1}_{i,s,r} \times p3nat + \text{DEX32\_2}_{i,s,r} \times (tc\_hous_{i,s,r} + p\_basic_{i,s}) + \text{DEX32\_3}_{i,s,r} \times vc\_hous_{i,s} \qquad \begin{array}{l} i \in COM \\ s \in SOU \end{array}$$

Commonwealth Government production tax: Equation *E_cpptax*

$$cpptax_{j,r} = \text{HP\_3}_{j,r} \times p3reg_r + fprodj_j + cfprodjr_{j,r} \qquad \begin{array}{l} j \in IND \\ r \in REG \end{array}$$

Commonwealth government debt to GDP Ratio: Equation *E_debt_gdp*

$$debt\_gdp\_tl = debtF\_tl - r\_gdpe$$

Change in the foreign currency value of Commonwealth Government debt at time *t*: Equation *E_del_debtF*

$$del\_debtF = \text{PSBR\_F\_FC} \times del\_unity$$

Foreign currency value of the net debt of Commonwealth Government at *t*+1: Equation *E_debtF_t1*

$$\begin{aligned} &debtF\_t1 = \\ &\left[100/(\text{OS\_DEBTF} + \text{PSBR\_F0} \times \{1/\text{PHI}\})\right] \times del\_debtF + \\ &\left[100/(\text{OS\_DEBTF} \times \text{PHI} + \text{PSBR\_F0})\right] \times cb2 - \\ &\left[\text{PSBR\_F0}/(\text{OS\_DEBTF} \times \text{PHI} + \text{PSBR\_F0})\right] \times x\_rate \end{aligned}$$

Net foreign interest payments by Commonwealth Government *r*: Equation *E_net_os_f*

$$net\_os\_f = \left[100/\text{OS\_DEBTF}\right] \times del\_debtF + os\_int\_F$$

Percentage change in Commonwealth collections of household consumption taxes: Equation *E_cw3tax*

$$\begin{aligned} &\text{CWTAX3} \times cw3tax = \sum_{i \in \text{COM}} \sum_{s \in \text{SOU}} \sum_{r \in \text{REG}} \text{TAX3}_{i,s,r,\text{Fed}} \times \\ &\left(tc\_hous_{i,s,r} + p\_basic_{i,s} + xr\_hous_{i,s,r}\right) \end{aligned}$$

The indexing to consumption tax collections of Commonwealth transfers to regional governments: Equation *E_ft61*

$$t61_r = cw3tax + ft61_r \qquad r \in \text{REG}$$

8. FOREIGN EXPORT DEMANDS

Demands for traditional exports: Equation *E_xr_expT*

$$xr\_exp_{i,r} = -[1/\text{GAMMA}_i] \times p\_rexp_{i,r} + f\_eq24t\_ir_{i,r} + feq\_generalr_r \qquad \begin{array}{l} i \in \text{TRAD} \\ r \in \text{REG} \end{array}$$

Demands for non-traditional exports – treatment 1: Equation *E_xr_expN1*

$$xr\_exp_{i,r} = -[1/\text{GAMMA}_i] \times p\_rexp_{i,r} + f\_eq24n\_ir_{i,r} + feq\_generalr_r \qquad \begin{array}{l} i \in \text{NTRAD} \\ r \in \text{REG} \end{array}$$

Demands for non-traditional exports - treatment 2: Equation *E_xr_expN2*

$$xr\_exp_{i,r} = -[1/\text{GAMMAN}] \times xi\_ntrad_r + f\_ntrad_{i,r} + feq\_generalr_r \qquad \begin{array}{l} i \in \text{NTRAD} \\ r \in \text{REG} \end{array}$$

Economy wide foreign currency price index for non-traditional exports: Equation *E_xi_ntrad*

$$\left[\sum_{i \in \text{NTRAD}} \text{PV4}_{i,r}\right] \times xi\_ntrad_r = \sum_{k \in \text{NTRAD}} \text{PV4}_{k,r} \times p\_rexp_{k,r}$$

Demands for "exogenous export" commodities: Equation *E_xr_expX*

$$xr\_exp_{ir} = f\_xfordem_{ir} + feq\_generalr_r \qquad \begin{array}{l} i \in \text{EXOG} \\ r \in \text{REG} \end{array}$$

Allows common shift of regional non-traditional exports: Equation *E_feq_generalr*

$$feq\_generalr_r = ffeq\_generalr_r + feq\_general \qquad r \in \text{REG}$$

9. MARGIN DEMANDS

Margins on commodity flows to producers for current production: Equation *E_x_mar1*

$$x\_mar1_{u,r,i,s,j,t} = x1_{i,s,j,t} + a1mar_{u,r,i,s,j,t}$$

u ∈ MAR
r ∈ REG
i ∈ COM
s ∈ SOU
j ∈ IND
t ∈ REG

Margins on commodity flows to capital creators: Equation *E_x_mar2*

$$x\_mar2_{u,t,i,s,j,r} = x2_{i,s,j,r} + a2mar_{u,t,i,s,j,r}$$

u ∈ MAR
t ∈ REG
i ∈ COM
s ∈ SOU
j ∈ IND
r ∈ REG

Margins on commodity flows to households: Equation *E_x_mar3*

$$x\_mar3_{u,t,i,s,r} = xr\_hous_{i,s,r} + a3mar_{u,t,i,s,r}$$

u ∈ MAR
t ∈ REG
i ∈ COM
s ∈ SOU
r ∈ REG

Margins on commodity flows to exports: Equation *E_x_mar4*

$$x\_mar4_{u,t,i,r} = xr\_exp_{i,r} + a4mar_{u,t,i,r}$$

u ∈ MAR
t ∈ REG
i ∈ COM
s ∈ SOU
r ∈ REG

Margins on commodity flows to state government *r*: Equation *E_x_mar5*

$$x\_mar5_{u,t,i,s,r} = x\_sg_{i,s,r} + a5mar_{u,t,i,s,r}$$

u ∈ MAR
t ∈ REG
i ∈ COM
s ∈ SOU
r ∈ REG)

Margins on commodity flows to the Commonwealth Government: Equation *E_x_mar6*

$$x\_mar6_{u,t,i,s} = x\_cg_{i,s} + a6mar_{u,t,i,s}$$

u ∈ MAR
t ∈ REG
i ∈ COM
s ∈ SOU

Technical change on margin usage - current production: Equation *E_a1mar*

$$a1mar_{u,r,i,s,j,t} = fa1mar_{u,r,i,s,j,t} + ai_u + ais_{u,r}$$

u ∈ MAR
r ∈ REG
i ∈ COM
s ∈ SOU
j ∈ IND
t ∈ REG

Technical change on margin usage - capital formation: Equation *E_a2mar*

$$a2mar_{u,r,i,s,j,t} = fa2mar_{u,r,i,s,j,t} + ai_u + ais_{u,r}$$

u ∈ MAR
r ∈ REG
i ∈ COM
s ∈ SOU
j ∈ IND
t ∈ REG

Technical change on margin usage - household purchases: Equation *E_a3mar*

$$a3mar_{u,t,i,s,r} = fa3mar_{u,t,i,s,r} + ai_u + ais_{u,t}$$

u ∈ MAR
t ∈ REG
i ∈ COM
s ∈ SOU
r ∈ REG

Technical change on margin usage – Exports: Equation *E_a4mar*

$$a4mar_{u,t,i,r} = fa4mar_{u,t,i,r} + ai_u + ais_{u,t}$$

u ∈ MAR
t ∈ REG
i ∈ COM
r ∈ REG

Technical change on margin usage - State govt purchases: Equation *E_a5mar*

$$a5mar_{u,t,i,s,r} = fa5mar_{u,t,i,s,r} + ai_u + ais_{u,t}$$

u ∈ MAR
t ∈ REG
i ∈ COM
s ∈ SOU
r ∈ REG

Technical change on margin usage - Commonwealth purchases: Equation *E_a6mar*

$$a6mar_{u,t,i,s} = fa6mar_{u,t,i,s} + ai_{u} + ais_{u,t}$$

u ∈ MAR
t ∈ REG
i ∈ COM
r ∈ REG

10. MISCELLANEOUS EQUATIONS

Exogenous determination of individual commodity import prices: Equation *E_pmp*

$$pmp_i = f\_pmp\_i_i + f\_pmp \qquad i \in COM$$

National index of foreign currency import prices: Equation *E_pMnat_fc*

$$pMnat\_fc = pMnat - x\_rate$$

Index of domestic price of imported goods, using import weights: Equation *E_pMdom*

$$\left[\sum_{r\in REG} IMP\_R_r\right] \times pMdom = \sum_{i\in COM}\sum_{r\in REG} IMPI\_R_{i,r} \times p\_basic_{i,r}$$

Traded goods price index: Equation *E_p_tg*

$$p\_tg = [AGG\_E/\{AGG\_E + AGG\_M\}] \times p4nat + [AGG\_M/\{AGG\_E + AGG\_M\}] \times pMdom$$

Real exchange rate: Equation *E_xrate_r*

$$xrate\_r = p\_tg - x\_rate - pMnat\_fc$$

National volume of exports of good *i*: Equation *E_x_exp*

$$x\_exp_i = \sum_{r\in REG} SH4_{i,r} \times xr\_exp_{i,r} \qquad i \in COM$$

Foreign currency export price of *i*, economy-wide: Equation *E_p_exp*

$$p\_exp_i = \sum_{r\in REG} SH4_{i,r} \times p\_rexp_{i,r} \qquad i \in COM$$

Demand for imported commodity *i*: Equation *E_x_imp*

$$x\_imp_i = \sum_{j\in IND}\sum_{r\in REG} B\_3K_{i,j,r,Int} \times x1_{i,RoW,j,r} + \sum_{j\in IND}\sum_{r\in REG} B\_3K_{i,j,r,Kap} \times x2_{i,RoW,j,r} + \sum_{r\in REG} B\_3HOU_{i,r} \times xr\_hous_{i,RoW,r} + \sum_{r\in REG} B\_3SG_{i,r} \times x\_sg_{i,RoWr} + \sum_{r\in REG} B\_3CG_i \times x\_cg_{i,RoW} \qquad i \in COM$$

Imports by region *r* of commodity *i*: Equation *E_ximp_r*

$$\begin{aligned} ximp\_r_{i,r} = \sum_{j \in IND} \Bigg\{ & TARF_i \times \Big[BAS1_{i,RoW,j,r} \times x1_{i,RoW,j,r} \\ & + BAS2_{i,RoW,j,r} \times x2_{i,RoW,j,r} \Big] \Bigg\} + TARF_i \times \Big[BAS3_{i,RoW,r} \\ & \times xr\_hous_{i,RoW,r} + BAS5_{i,RoW,r} \times x\_sg_{i,RoW,r} + \\ & CGOV\_SH_r \times BAS6_{i,RoW} \times x\_cg_{i,RoW} \Big] \end{aligned} \qquad \begin{array}{l} i \in COM \\ r \in REG \end{array}$$

$$TARF_i \times \Bigg[\sum_{j \in IND} \Big[BAS1_{i,RoW,j,r} + BAS2_{i,RoW,j,r} \Big] + BAS3_{i,RoW,r} + BAS5_{i,RoW,r} + CGOV\_SH_r \times BAS6_{i,RoW} \Bigg] \times$$

Ratio of real national investment to real consumption: Equation *E_omega*

$$finv\_com = i\_real - cR$$

Ratio of real consumption to real GNE: Equation *E_r_cr_rgne*

$$r\_cr\_rgne = x3nat - real\_gne$$

Ratio of real investment to real GNE: Equation *E_r_ir_rgne*

$$r\_ir\_rgne = x2nat - real\_gne$$

Change in BT/GDP ratio: Equation *E_del_bt_gdp*

$$100 \times BASE\_GDP \times del\_bt\_gdp = 100 \times del\_B - \left[\sum_{r \in REG} EXP\_R_r - \sum_{r \in REG} IMP\_R_r \right] \times n\_gdpe$$

Domestic currency balance of trade surplus: Equation *E_del_b*

$$100 \times del\_B = \left[\sum_{r \in REG} EXP\_R_r \right] \times n4nat - \left[\sum_{r \in REG} IMP\_R_r \right] \times nMnat$$

User price of labour, by occupation and regional industry: Equation *E_plab*

$$\begin{aligned} plab_{m,j,r} = {} & WP\_HOME_{m,j,r} \times postwage_{m,j,r} + \\ & WP\_PAYE_{m,j,r} \times paye_{m,j,r} + WP\_ROLL_{m,j,r} \times p\_roll_{m,j,r} \end{aligned} \qquad \begin{array}{l} m \in OCC \\ j \in IND \\ r \in REG \end{array}$$

Pre-tax wages: Equation *E_prewage*

$$prewage_{m,j,r} = \mathrm{HW1R}_{m,j,r} \times p3reg_r + \mathrm{HW1}_{m,j} \times p3nat + fpre + fprer_r + fpreq_m + fpreqr_{m,r} + fprej_j + fprejr_{j,r} + fpreqj_{m,j} + fpreqjr_{m,j,r}$$

m ∈ OCC
j ∈ IND
r ∈ REG

PAYE taxes per unit of labour: Equation *E_paye*

$$paye_{m,j,r} = \mathrm{HW2}_{m,j} \times prewage_{m,j,r} + fpaye$$

m ∈ OCC
j ∈ IND
r ∈ REG

Payroll taxes per unit of labour: Equation *E_p_roll*

$$p\_roll_{m,j,r} = \mathrm{HW3}_{m,j,r} \times prewage_{m,j,r} + frollr_r + frollm_{m,r} + frollh_{j,r} + frollmh_{m,j,r} + tax\_shiftr_r$$

m ∈ OCC
j ∈ IND
r ∈ REG

Post-tax wage per labour unit: Equation *E_postwage*

$$prewage_{m,j,r} = \mathrm{WPH\_SH}_{m,j,r} \times postwage_{m,j,r} + \mathrm{WPP\_SH}_{m,j,r} \times paye_{m,j,r}$$

m ∈ OCC
j ∈ IND
r ∈ REG

Region-wide nominal pre-tax wage: Equation *E_prewage_nr*

$$\left[\sum_{q \in OCC} \sum_{j \in IND} \left(\mathrm{MU1}_{q,j,r} + \mathrm{MU2}_{q,j,r}\right)\right] \times prewage\_nr_r = \sum_{t \in OCC} \sum_{k \in IND} \left[\mathrm{MU1}_{t,k,r} + \mathrm{MU2}_{t,k,r}\right] \times prewage_{t,k,r}$$

r ∈ REG

Region-wide real consumer pre-tax wage: Equation E_prewage_rr

$$prewage\_rr_r = prewage\_nr_r - p3nat$$

r ∈ REG

Facilitates setting of utility prices in historical simulations: Equation *E_fp_utility*

$$p\_basic_{i,s} = p3reg_s - \mathrm{XUTE}_s \times del\_x_s + fp\_utility_{i,s}$$

i ∈ UTILITY
s ∈ REG

Production tax revenue from non-utility industries: Equation *E_prod_n_util*

$$\left[\sum_{j\in IND} MX1_{j,r} - \sum_{k\in UTILITY} MX1_{K,r}\right] \times prod\_n\_util_r = \left[\sum_{j\in IND} MX1_{j,r}\right] \times b37_r \sum_{k\in UTILITY} MX1_{k,r} \times \left(spptax_{k,r} + xsptax_{k,r}\right) \qquad r \in REG$$

Sectoral employments: Equation *E_emp_12*

$$\left[\sum_{j\in INDNO12_s} U\_TOT_{j,r}\right] \times emp\_12_{s,r} = \sum_{k\in INDNO12_s} U\_TOT_{k,r} \times empjr_{k,r} \qquad s \in IND12,\ r \in REG$$

Sectoral activity levels: Equation *E_zact_12*

$$\left[\sum_{j\in INDNO12_s} PRIMTOT_{j,r}\right] \times zact\_12_{s,r} = \sum_{k\in INDNO12_s} PRIMTOT_{k,r} \times zact_{k,r} \qquad s \in IND12,\ r \in REG$$

Sectoral basic prices: Equation *E_costs_12*

$$\left[\sum_{j\in INDNO12_s} TOTCOST_{j,r}\right] \times costs\_12_{s,r} = \sum_{k\in INDNO12_s} \sum_{i\in COM} \left[TOTCOST_{k,r} \times H\_REV_{i,k,r}\right] \times p\_basic_{i,r} \qquad s \in IND12,\ r \in REG$$

Sectoral export volumes: Equation *E_exp_12*

$$\left[\sum_{j\in COMNO12_s} PV4_{j,r}\right] \times exp\_12_{s,r} = \sum_{k\in COMNO12_s} PV4_{k,r} \times xr\_exp_{k,r} \qquad s \in COM12,\ r \in REG$$

Sectoral household consumption: Equation *E_hous_12*

$$\left[\sum_{j\in COMNO12_s} \sum_{t\in SOU} PV3_{j,t,r}\right] \times hous\_12_{s,r} = \sum_{k\in COMNO12_s} \left[\sum_{t\in SOU} PV3_{k,t,r}\right] \times x\_hous_{k,r} \qquad s \in COM12,\ r \in REG$$

Sectoral real gross fixed capital formation: Equation *E_invest_12*

$$\left[\sum_{j\in INDNO12_s} QINVEST_{j,r}\right] \times invest\_12_{s,r} = \sum_{k\in INDNO12_s} QINVEST_{k,r} \times y\_p56_{k,r} \qquad \begin{array}{l} s \in COM12 \\ r \in REG \end{array}$$

Sectoral foreign currency export prices: Equation *E_prexp_12*

$$\left[\sum_{j\in COMNO12_s} PV4_{j,r}\right] \times prexp\_12_{s,r} = \sum_{k\in COMNO12_s} PV4_{k,r} \times p\_rexp_{k,r} \qquad \begin{array}{l} s \in COM12 \\ r \in REG \end{array}$$

Sectoral capital stocks: Equation *E_kstj_12*

$$\left[\sum_{j\in INDNO12_s} VCAP\_AT\_T_{j,r}\right] \times kstj\_12_{s,r} = \sum_{k\in INDNO12_s} VCAP\_AT\_T_{k,r} \times cap\_at\_t_{k,r} \qquad \begin{array}{l} s \in IND12 \\ r \in REG \end{array}$$

Contribution of wage income: Equation *E_ginc_wage*

$$XGROSS_f \times ginc\_wage_f = \sum_{m\in OCC}\sum_{j\in IND}\left[MU1_{m,j,f} + MU2_{m,j,f}\right] \times \left(prewage_{m,j,f} + x\_lab_{m,j,f}\right) \qquad f \in REG$$

Contribution of rental income: Equation *E_ginc_rent*

$$XGROSS_f \times ginc\_rent_f = R\_GROSSRENT_f \times p\_r\_grossrent_f \qquad f \in REG$$

Contribution of other cost income: Equation *E_ginc_ocost*

$$XGROSS_f \times ginc\_ocost_f = OXX3_f \times \left(pcost + oxcost_f\right) \qquad f \in REG$$

Contribution of phantom tax income: Equation *E_ginc_phant*

$$XGROSS_f \times ginc\_phant_f = HOUS\_PHANT_f \times p\_housphant_f \qquad f \in REG$$

Contribution of net interest: Equation *E_ginc_fint*

$$XGROSS_f \times ginc\_fint_f = \left[FOR\_NET\_INT_f \times PHI\right] \times net\_f\_int\_dc_f \qquad f \in REG$$

Contribution of exogenous net foreign income: Equation *E_ginc_xnfi*

$$XGROSS_f \times ginc\_xnfi_f = \left[OHHNI_f \times PHI\right] \times \left(ex\_hhnfi_f + x\_rate\right) \qquad f \in REG$$

Equation *E_dinc_ginc*

$$[\mathrm{XGROSS}_r - \mathrm{R\_TAXSUM}_r] \times dinc\_ginc_r = \mathrm{XGROSS}_r \times n\_ginc_r \qquad r \in \mathrm{REG}$$

Equation E_dinc_dtax

$$[\mathrm{XGROSS}_r - \mathrm{R\_TAXSUM}_r] \times dinc\_dtax_r = -[\mathrm{R\_TAXSUM}_r] \times dtax_r \qquad r \in \mathrm{REG}$$

Equation *E_dtax_kaptax*

$$\mathrm{R\_TAXSUM}_r \times dtax\_kaptax_r = \mathrm{R\_NETKTAX}_r \times p\_r\_kaptax_r \qquad r \in \mathrm{REG}$$

Equation *E_dtax_paye*

$$\mathrm{R\_TAXSUM}_r \times dtax\_paye_r = \mathrm{TPAYE}_r \times b41r_r \qquad r \in \mathrm{REG}$$

Equation *E_dtax_b34r*

$$\mathrm{R\_TAXSUM}_r \times dtax\_b34r_r = \mathrm{TDOTHER}_r \times b34r_r \qquad r \in \mathrm{REG}$$

Equation *E_dtax_b47*

$$\mathrm{R\_TAXSUM}_r \times dtax\_b47_r = \mathrm{CGR7}_r \times b47 \qquad r \in \mathrm{REG}$$

Equation *E_dtax_b38r*

$$\mathrm{R\_TAXSUM}_r \times dtax\_b38r_r = \mathrm{SGR8}_r \times b38r_r \qquad r \in \mathrm{REG}$$

Equation *E_dtax_unb*

$$\mathrm{R\_TAXSUM}_r \times dtax\_unb_r = -\mathrm{CGO3}_r \times (punb + x\_unemp_r) \qquad r \in \mathrm{REG}$$

Equation *E_dtax_t62*

$$\mathrm{R\_TAXSUM}_r \times dtax\_t62_r = -\mathrm{CGO5}_r \times t62_r \qquad r \in \mathrm{REG}$$

Equation *E_dtax_t51*

$$\mathrm{R\_TAXSUM}_r \times dtax\_t51_r = -\mathrm{SGO3}_r \times t51_r \qquad r \in \mathrm{REG}$$

Decomposition of industry output: intermediate sales: Equation *E_dzact1*

$$[\mathrm{SALES}_{i,s} + \mathrm{TINY}] \times dzact1_{i,s,r} = \sum_{j \in \mathrm{IND}} \mathrm{BAS1}_{i,s,j,r} \times x1_{i,s,j,r}$$

i ∈ COM
s ∈ REG
r ∈ REG

Decomposition of industry output: sales to capital creators: Equation *E_dzact2*

$$[\mathrm{SALES}_{i,s} + \mathrm{TINY}] \times dzact2_{i,s,r} = \sum_{j \in \mathrm{IND}} \mathrm{BAS2}_{i,s,j,r} \times x2_{i,s,j,r}$$

i ∈ COM
s ∈ REG
r ∈ REG

Decomposition of industry output: sales to households: Equation *E_dzact3*

$$[\mathrm{SALES}_{i,s} + \mathrm{TINY}] \times dzact3_{i,s,r} = \mathrm{BAS3}_{i,s,r} \times xr\_hous3_{i,s,r}$$

i ∈ COM
s ∈ REG
r ∈ REG

Decomposition of industry output: export sales: Equation *E_dzact4*

$$[\mathrm{SALES}_{i,s} + \mathrm{TINY}] \times dzact4_{i,s} = \mathrm{BAS4}_{i,s} \times xr\_exp_{i,s}$$

i ∈ COM
s ∈ REG

Decomposition of industry output: sales to regional governments: Equation *E_dzact5*

$$[\mathrm{SALES}_{i,s} + \mathrm{TINY}] \times dzact5_{i,s,r} = \mathrm{BAS5}_{i,s,r} \times x\_sg_{i,s,r}$$

i ∈ COM
s ∈ REG
r ∈ REG

Decomposition of industry output: sales to Commonwealth Government Equation *E_dzact6*

$$[\mathrm{SALES}_{i,s} + \mathrm{TINY}] \times dzact6_{i,s} = \mathrm{BAS6}_{i,s} \times x\_cg_{i,s}$$

i ∈ COM
s ∈ REG

Decomposition of industry output: margin sales: Equation *E_dzact7*

$$dzact7_{i,s} = 0$$

i ∈ NONMAR
s ∈ REG

Decomposition of industry output: margin sales: Equation *E_dzact7m*

$$\left[\mathrm{SALES}_{i,s} + \mathrm{TINY}\right] \times dzact7_{i,s} =$$
$$\sum_{u\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{r\in REG} \mathrm{MAR1}_{u,t,j,r,i,s} \times x\_mar1_{i,s,u,t,j,r} +$$
$$\sum_{u\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{r\in REG} \mathrm{MAR2}_{u,t,j,r,i,s} \times x\_mar2_{i,s,u,t,j,r} +$$
$$\sum_{u\in COM}\sum_{t\in SOU}\sum_{r\in REG} \mathrm{MAR3}_{u,t,r,i,s} \times x\_mar3_{i,s,u,t,r} +$$
$$\sum_{u\in COM}\sum_{t\in SOU}\sum_{r\in REG} \mathrm{MAR5}_{u,t,r,i,s} \times x\_mar5_{i,s,u,t,r} +$$
$$\sum_{u\in COM}\sum_{t\in REG} \mathrm{MAR4}_{u,t,i,s} \times x\_mar4_{i,s,u,t} +$$
$$\sum_{u\in COM}\sum_{t\in SOU} \mathrm{MAR6}_{u,t,i,s} \times x\_mar6_{i,s,u,t}$$

$i \in NONMAR$
$s \in REG$

Sectoral output decomposition: sales to user 1: Equation *E_dzact1_12*

$$\left[\sum_{j\in INDNO12_s} \mathrm{PRIMTOT}_{j,k}\right] \times dzact1\_12_{s,k,r} = \sum_{t\in INDNO12_s} \mathrm{PRIMTOT}_{t,k} \times dzact1_{t,k,r}$$

$s \in IND12$
$k \in REG$
$r \in REG$

Sectoral output decomposition; sales to user 2: Equation *E_dzact2_12*

$$\left[\sum_{j\in INDNO12_s} \mathrm{PRIMTOT}_{j,k}\right] \times dzact2\_12_{s,k,r} = \sum_{t\in INDNO12_s} \mathrm{PRIMTOT}_{t,k} \times dzact2_{t,k,r}$$

$s \in IND12$
$k \in REG$
$r \in REG$

Sectoral output decomposition; sales to user 3: Equation *E_dzact3_12*

$$\left[\sum_{j\in INDNO12_s} \mathrm{PRIMTOT}_{j,k}\right] \times dzact3\_12_{s,k,r} = \sum_{t\in INDNO12_s} \mathrm{PRIMTOT}_{t,k} \times dzact3_{t,k,r}$$

$s \in IND12$
$k \in REG$
$r \in REG$

Sectoral output decomposition; sales to user 4: Equation *E_dzact4_12*

$$\left[\sum_{j\in INDNO12_s} \mathrm{PRIMTOT}_{j,k}\right] \times dzact4\_12_{s,k} = \sum_{t\in INDNO12_s} \mathrm{PRIMTOT}_{t,k} \times dzact4_{t,k}$$

$s \in IND12$
$k \in REG$
$r \in REG$

Sectoral output decomposition; sales to user 5: Equation *E_dzact5_12*

$$\left[\sum_{j\in INDNO12_s} \mathrm{PRIMTOT}_{j,k}\right] \times dzact5\_12_{s,k,r} = \sum_{t\in INDNO12_s} \mathrm{PRIMTOT}_{t,k} \times dzact5_{t,k,r}$$

$s \in IND12$
$k \in REG$
$r \in REG$

Sectoral output decomposition; sales to user 6: Equation *E_dzact6_12*

$$\left[\sum_{j\in INDNO12_s} PRIMTOT_{j,k}\right] \times dzact6\_12_{s,k} = \sum_{t\in INDNO12_s} PRIMTOT_{t,k} \times dzact6_{t,k} \qquad \begin{array}{l} s \in IND12 \\ k \in REG \end{array}$$

Sectoral output decomposition; sales for margin usage: Equation *E_dzact7_12*

$$\left[\sum_{j\in INDNO12_s} PRIMTOT_{j,k}\right] \times dzact7\_12_{s,k} = \sum_{t\in INDNO12_s} PRIMTOT_{t,k} \times dzact7_{t,k} \qquad \begin{array}{l} s \in IND12 \\ k \in REG \end{array}$$

Labour market adjustment in the deviation simulation: *Equation E_del_f_wage_c*

$$[RWAGE/RWAGE\_OLD]\times(r\_prewage - real\_wage\_c\_o) =$$
$$100\times[(RWAGE\_B/RWAGE\_OLD\_B)-(RWAGE\_L\_B/RWAGE\_O\_L\_B)]\times del\_unityl$$
$$+ ALPHA\times(EMPLOY/EMPLOY\_OLD)\times(l\_emp - emp\_w\_wgts\_o)+ del\_f\_wage\_c$$

Real national (consumer) pre-tax wage: Equation *E_prewage_r*

$$\left[\sum_{q\in OCC}\sum_{j\in IND}\sum_{r\in REG}[MU1_{q,j,r} + MU2_{q,j,r}]\right]\times r\_prewage =$$
$$\sum_{t\in OCC}\sum_{k\in IND}\sum_{r\in REG}[MU1_{t,k,r} + MU2_{t,k,r}]\times(prewage_{t,k,r} - p3nat)$$

Share of GRP in GDP: Equation *E_grp_sh*

$$grp\_sh_r = r\_grpfc3_r - r\_gdpfc3 \qquad r \in REG$$

11. REGIONAL ACCOUNTS

Real GSP – expenditure side: Equation *E_r_grpe*

$$\begin{aligned}&\text{BASE\_GSP}_r \times r\_grpe_r = \text{CON\_R}_r \times x3reg_r \\ &+ \text{INV\_R}_r \times x2reg_r + \text{SGOV\_R}_r \times x5reg_r + \text{CGOV\_R}_r \\ &\times x6reg_r + \text{EXP\_R}_r \times x4reg_r - \text{IMP\_R}_r \times xMreg_r \\ &+ \text{ISEXP\_TOT}_r \times x\_isx_r - \text{ISIMP\_TOT}_r \times x\_ism_r\end{aligned} \qquad r \in REG$$

Nominal GSP: Equation *E_n_grpe*

$$\begin{aligned}&\text{BASE\_GSP}_r \times n\_grpe_r = \text{CON\_R}_r \times n3reg_r + \text{INV\_R}_r \\ &\times n2reg_r + \text{SGOV\_R}_r \times n5reg_r + \text{CGOV\_R}_r \\ &\times n6reg_r + \text{EXP\_R}_r \times n4reg_r - \text{IMP\_R}_r \times nMreg_r \\ &+ \text{ISEXP\_TOT}_r \times n\_isx_r - \text{ISIMP\_TOT}_r \times n\_ism_r\end{aligned} \qquad r \in REG$$

GSP deflator: Equation *E_gsp_def*

$$\begin{aligned}&\text{BASE\_GSP}_r \times gsp\_def_r = \text{CON\_R}_r \times p3reg_r + \text{INV\_R}_r \\ &\times p2reg_r + \text{SGOV\_R}_r \times p5reg_r + \text{CGOV\_R}_r \\ &\times p6reg_r + \text{EXP\_R}_r \times p4reg_r - \text{IMP\_R}_r \times pMreg_r \\ &+ \text{ISEXP\_TOT}_r \times p\_isx_r - \text{ISIMP\_TOT}_r \times p\_ism_r\end{aligned} \qquad r \in REG$$

Nominal GRP income side - region *r*: Equation *E_n_grpi*

$$
\begin{aligned}
&\mathrm{GDPI\_R}_{r} \times n\_grpi_{r} = \\
&\sum_{j\in IND}\left\{\sum_{t\in OWNERS}\left[\mathrm{MW1}_{t,j,r}+\mathrm{MW2}_{t,j,r}\right]\times\left(x\_prim_{land,j,r}+pprim_{land,j,r}\right)\right\} \\
&+\sum_{j\in IND}\left\{\sum_{t\in OCC}\left[\mathrm{MU1}_{t,j,r}+\mathrm{MU2}_{t,j,r}+\mathrm{MU3}_{t,j,r}\right]\times\left(x\_prim_{labour,j,r}+pprim_{labour,j,r}\right)\right\} \\
&+\sum_{j\in IND}\left\{\sum_{t\in OWNERS}\left[\mathrm{MV1}_{t,j,r}+\mathrm{MV2}_{t,j,r}+\mathrm{MV3}_{t,j,r}\right]\times\left(x\_prim_{capital,j,r}+pprim_{capital,j,r}\right)\right\} \\
&+\sum_{j\in IND}\mathrm{MX1}_{j,r}\times\left(spptax_{j,r}+xsptax_{j,r}\right) \\
&+\sum_{j\in IND}\mathrm{MX2}_{j,r}\times\left(cpptax_{j,r}+xcptax_{j,r}\right) \\
&+\sum_{j\in IND}\mathrm{MX3}_{j,r}\times\left(pcost+xcost_{j,r}\right) \\
&+\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{g\in REG}\mathrm{TAX1}_{i,s,j,r,g}\times\left(ts0\_ind_{i,s,g,int}+p\_basic_{i,s}+x1_{i,s,j,r}\right) \\
&+\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\mathrm{TAX1}_{i,s,j,r,Fed}\times\left(tc0\_ind_{i,s,j,r,int}+p\_basic_{i,s}+x1_{i,s,j,r}\right) \\
&+\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{g\in REG}\mathrm{TAX2}_{i,s,j,r,g}\times\left(ts0\_ind_{i,s,g,kap}+p\_basic_{i,s}+x2_{i,s,j,r}\right) \\
&+\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\mathrm{TAX2}_{i,s,j,r,Fed}\times\left(tc0\_ind_{i,s,j,r,kap}+p\_basic_{i,s}+x2_{i,s,j,r}\right) \\
&+\sum_{i\in COM}\sum_{s\in SOU}\sum_{g\in REG}\mathrm{TAX3}_{i,s,r,g}\times\left(ts\_hous_{i,s,g}+p\_basic_{i,s}+xr\_hous_{i,s,r}\right) \\
&+\sum_{i\in COM}\sum_{s\in SOU}\mathrm{TAX3}_{i,s,r,Fed}\times\left(tc\_hous_{i,s}+p\_basic_{i,s}+xr\_hous_{i,s,r}\right) \\
&+\sum_{i\in COM}\mathrm{TAX4}_{i,r,Fed}\times\left(g\_extax_{i,r}+xr\_exp_{i,r}\right) \\
&+\sum_{i\in COM}\sum_{s\in REG}\sum_{j\in IND}\mathrm{TAX1F}_{i,s,j,r}\times total\_phant1_{i,s} \qquad r\in REG \\
&+\sum_{i\in COM}\sum_{s\in REG}\sum_{j\in IND}\mathrm{TAX2F}_{i,s,j,r}\times total\_phant2_{i,s} \\
&+\sum_{i\in COM}\sum_{s\in REG}\mathrm{TAX3F}_{i,s,r}\times total\_phant3_{i,s} \\
&+\sum_{i\in COM}\sum_{s\in REG}\mathrm{TAX5F}_{i,s,r}\times total\_phant5_{i,s} \\
&+\sum_{i\in COM}\mathrm{TAX6F}_{i,r}\times total\_phant6_{i,r} \\
&+\sum_{i\in COM}\mathrm{TAX4F}_{i,r}\times total\_phant4_{i,r}+\mathrm{CGR3\_R}_{r}\times b43\_r_{r}
\end{aligned}
$$

Real gross regional product at market prices - income approach: Equation *E_r_grpi*

$$r\_grpi_{r} = n\_grpi_{r} - gsp\_def_{r} \qquad r\in REG$$

Nominal gross regional product at factor cost: Equation *E_n_grpfc1*

$$[\text{BASE\_GSP}_r - \text{INDTAXREV\_R}_r] \times n\_grpfc1_r = \text{BASE\_GSP}_r \times n\_grpe_r - \text{INDTAXREV\_R}_r \times itrev\_r_r \qquad r \in \text{REG}$$

Regional price index for gross regional product at factor cost: Equation *E_p_grpfc2*

$$\begin{aligned}
&\text{GSP_FACR}_r \times p_grpfc2_r = \\
&\sum_{j \in IND}\left[\sum_{t \in OWNERS}\left[\text{MW1}_{t,j,r} + \text{MW2}_{t,j,r}\right]\right] \times \left(pprim_{land,j,r} + a_fac_{land,j,r} + a_in1_{j,r}\right) + \\
&\sum_{j \in IND}\left[\sum_{t \in OCC}\left[\text{MU1}_{t,j,r} + \text{MU2}_{t,j,r} + \text{MU3}_{t,j,r}\right]\right] \times \left(pprim_{labour,j,r} + a_fac_{labour,j,r} + a_in1_{j,r}\right) + \\
&\sum_{j \in IND}\left[\sum_{t \in OWNERS}\left[\text{MV1}_{t,j,r} + \text{MV2}_{t,j,r} + \text{MV3}_{t,j,r}\right]\right] \times \left(pprim_{capital,j,r} + a_fac_{capital,j,r} + a_in1_{j,r}\right) + \\
&\sum_{j \in IND} \text{MX3}_{j,r} \times \left(pcost + a_in1_{j,r}\right)
\end{aligned} \qquad r \in \text{REG}$$

Real gross regional product at factor cost: Equation *E_r_grpfc1*

$$r\_grpfc1_r = n\_grpfc1_r - p\_grpfc2_r \qquad r \in \text{REG}$$

Real gross regional product at factor cost: Equation *E_r_grpfc2*

$$\begin{aligned}
&\text{GSP_FACR}_r \times r_grpfc2_r = \\
&\sum_{j \in IND}\left[\sum_{t \in OWNERS}\left[\text{MW1}_{t,j,r} + \text{MW2}_{t,j,r}\right]\right] \times \left(x_prim_{land,j,r} - a_fac_{land,j,r} - a_in1_{j,r}\right) + \\
&\sum_{j \in IND}\left[\sum_{t \in OCC}\left[\text{MU1}_{t,j,r} + \text{MU2}_{t,j,r} + \text{MU3}_{t,j,r}\right]\right] \times \left(x_prim_{labour,j,r} - a_fac_{labour,j,r} - a_in1_{j,r}\right) + \\
&\sum_{j \in IND}\left[\sum_{t \in OWNERS}\left[\text{MV1}_{t,j,r} + \text{MV2}_{t,j,r} + \text{MV3}_{t,j,r}\right]\right] \times \left(x_prim_{capital,j,r} - a_fac_{capital,j,r} - a_in1_{j,r}\right) + \\
&\sum_{j \in IND} \text{MX3}_{j,r} \times \left(xcost_{j,r} - a_in1_{j,r}\right)
\end{aligned} \qquad r \in \text{REG}$$

Nominal gross regional product at factor cost: Equation *E_ngrpfc2*

$$\begin{aligned}
&GSP_FACR_r \times n_grpfc2_r = \\
&\sum_{j\in IND}\left[\sum_{t\in OWNERS}\left[MW1_{t,j,r}+MW2_{t,j,r}\right]\right]\times\left(x_prim_{land,j,r}+pprim_{land,j,r}\right) \\
&+\sum_{j\in IND}\left[\sum_{t\in OCC}\left[MU1_{t,j,r}+MU2_{t,j,r}+MU3_{t,j,r}\right]\right]\times\left(x_prim_{labour,j,r}+pprim_{labour,j,r}\right) \qquad r\in REG \\
&+\sum_{j\in IND}\left[\sum_{t\in OWNERS}\left[MV1_{t,j,r}+MV2_{t,j,r}+MV3_{t,j,r}\right]\right]\times\left(x_prim_{capital,j,r}+pprim_{capital,j,r}\right) \\
&+\sum_{j\in IND} MX3_{j,r}\times\left(pcost+xcost_{j,r}\right)
\end{aligned}$$

Real GRP at factor cost - value added weights: Equation *E_r_grpfc3*

$$\left[\sum_{j\in IND} PRIMTOT_{j,r}\right]\times r\_grpfc3_r=\sum_{j\in IND} PRIMTOT_{j,r}\times zact_{j,r} \qquad r\in REG$$

Equation *E_n_grpfc3*

$$n\_grpfc3_r = r\_grpfc3_r + p\_grpfc2_r \qquad r\in REG$$

Regional index of real gross fixed capital expenditure: Equation *E_x2reg*

$$\begin{aligned}
&\left[\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND} PV2_{i,s,j,r}\right]\times x2reg_r = \\
&\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND} PV2_{i,s,j,r}\times\left(x2_{i,s,j,r}-a_in2_{j,r}-a2isjr_{i,s,j,r}\right)
\end{aligned} \qquad r\in REG$$

Quantity index of real regional consumption: Equation *E_x3reg*

$$CON\_R_r\times x3reg_r=\sum_{i\in COM}\sum_{s\in SOU} PV3_{i,s,r}\times xr\_hous_{i,s,r} \qquad r\in REG$$

Real regional exports: Equation *E_x4reg*

$$EXP\_R_r\times x4reg_r=\sum_{i\in COM} PV4_{i,r}\times xr\_exp_{i,r} \qquad r\in REG$$

Regional government *r*'s real consumption spending: Equation *E_x5reg*

$$\left[\sum_{i\in COM}\sum_{s\in SOU} PV5_{i,s,r}\right]\times x5reg_r=\sum_{k\in COM}\sum_{t\in SOU} PV5_{k,t,r}\times x\_sg_{k,t,r} \qquad r\in REG$$

Commonwealth Government real consumption spending by region: Equation *E_x6reg*

$$\begin{aligned}
&\mathrm{CGOV_R}_r \times x6reg_r = \sum_{i\in COM}\left[\mathrm{BAS6}_{i,r} + \mathrm{TAX6F}_{i,r}\right]\times x_cg_{i,r} \\
&+ \sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR} \mathrm{MAR6}_{i,s,u,r} \times x_mar6_{u,r,i,s} + \qquad r \in REG \\
&\sum_{i\in COM} \mathrm{CGOV_SH}_r \times \mathrm{BAS6}_{i,RoW} \times \mathrm{x_}cg_{i,RoW}
\end{aligned}$$

Real inter-regional exports from region *s*: Equation *E_x_isx*

$$\begin{aligned}
&\mathrm{ISEXP_TOT}_s \times x_isx_s = \\
&\sum_{i\in COM}\sum_{j\in IND}\sum_{r\in REG} \mathrm{BAS1}_{i,s,j,r} \times x1_{i,s,j,r} \\
&- \sum_{i\in COM}\sum_{j\in IND} \mathrm{BAS1}_{i,s,j,s} \times x1_{i,s,j,s} + \sum_{i\in COM}\sum_{j\in IND}\sum_{r\in REG} \mathrm{BAS2}_{i,s,j,r} \times x2_{i,s,j,r} \\
&- \sum_{i\in COM}\sum_{j\in IND} \mathrm{BAS2}_{i,s,j,s} \times x2_{i,s,j,s} + \sum_{i\in COM}\sum_{r\in REG} \mathrm{BAS3}_{i,s,r} \times xr_hous_{i,s,r} \\
&- \sum_{i\in COM} \mathrm{BAS3}_{i,s,s} \times xr_hous_{i,s,s} + \sum_{i\in COM}\sum_{r\in REG} \mathrm{BAS5}_{i,s,r} \times x_sg_{i,s,r} \\
&- \sum_{i\in COM} \mathrm{BAS5}_{i,s,s} \times x_sg_{i,s,s} \\
&+ \sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{r\in REG}\sum_{u\in MAR} \mathrm{MAR1}_{i,t,j,r,u,s} \times x_mar1_{u,s,i,t,j,r} \\
&- \sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{u\in MAR} \mathrm{MAR1}_{i,t,j,s,u,s} \times x_mar1_{u,s,i,t,j,s} \\
&+ \sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{r\in REG}\sum_{u\in MAR} \mathrm{MAR2}_{i,t,j,r,u,s} \times x_mar2_{u,s,i,t,j,r} \\
&- \sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{u\in MAR} \mathrm{MAR2}_{i,t,j,s,u,s} \times x_mar2_{u,s,i,t,j,s} \\
&+ \sum_{i\in COM}\sum_{t\in SOU}\sum_{r\in REG}\sum_{u\in MAR} \mathrm{MAR3}_{i,t,r,u,s} \times x_mar3_{u,s,i,t,r} \\
&- \sum_{i\in COM}\sum_{t\in SOU}\sum_{u\in MAR} \mathrm{MAR3}_{i,t,s,u,s} \times x_mar3_{u,s,i,t,s} \\
&+ \sum_{i\in COM}\sum_{t\in SOU}\sum_{r\in REG}\sum_{u\in MAR} \mathrm{MAR5}_{i,t,r,u,s} \times x_mar5_{u,s,i,t,r} \qquad s \in REG \\
&- \sum_{i\in COM}\sum_{t\in SOU}\sum_{u\in MAR} \mathrm{MAR5}_{i,t,s,u,s} \times x_mar5_{u,s,i,t,s}
\end{aligned}$$

Quantity of inter-regional imports to region *r*: Equation *E_x_ism*

$$
\begin{aligned}
&\text{ISIMP\_TOT}_r \times x\_ism_r = \sum_{i\in COM}\sum_{s\in REG}\sum_{j\in IND}\text{BAS1}_{i,s,j,r}\times x1_{i,s,j,r} \\
&-\sum_{i\in COM}\sum_{j\in IND}\text{BAS1}_{i,r,j,r}\times x1_{i,r,j,r}+\sum_{i\in COM}\sum_{s\in REG}\sum_{j\in IND}\text{BAS2}_{i,s,j,r}\times x2_{i,s,j,r} \\
&-\sum_{i\in COM}\sum_{j\in IND}\text{BAS2}_{i,r,j,r}\times x2_{i,r,j,r}+\sum_{i\in COM}\sum_{s\in REG}\text{BAS3}_{i,s,r}\times xr\_hous_{i,s,r} \\
&-\sum_{i\in COM}\text{BAS3}_{i,r,r}\times xr\_hous_{i,r,r}+\sum_{i\in COM}\sum_{s\in REG}\text{BAS5}\times x\_sg_{i,r,r}- \\
&\sum_{i\in COM}\text{BAS5}_{i,r,r}\times x\_sg_{i,r,r}+\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\sum_{t\in REG}\text{MAR1}_{i,s,j,r,u,t}\times x\_mar1_{u,t,i,s,j,r} \\
&-\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\text{MAR1}_{i,s,j,r,u,r}\times x\_mar1_{u,r,i,s,j,r} \\
&+\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\sum_{t\in REG}\text{MAR2}_{i,s,j,r,u,t}\times x\_mar2_{u,t,i,s,j,r} \\
&-\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\text{MAR2}_{i,s,j,r,u,r}\times x\_mar2_{u,r,i,s,j,r} \\
&+\sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\sum_{t\in REG}\text{MAR3}_{i,s,r,u,t}\times x\_mar3_{u,t,i,s,r} \\
&-\sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\text{MAR3}_{i,s,r,u,r}\times x\_mar3_{u,r,i,s,r} \\
&+\sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\sum_{t\in REG}\text{MAR5}_{i,s,r,u,t}\times x\_mar5_{u,t,i,s,r} \qquad r\in REG \\
&-\sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\text{MAR5}_{i,s,r,u,r}\times x\_mar5_{u,r,i,s,r}
\end{aligned}
$$

Volume of foreign imports into region *r*: Equation *E_xMreg*

$$
\begin{aligned}
&\text{IMP\_R}_r \times xMreg_r = \\
&\sum_{i\in COM}\sum_{j\in IND}\left[\text{TARF}_i\times\text{BAS1}_{i,RoW,j,r}\right]\times x1_{i,RoW,j,r}+ \\
&\sum_{i\in COM}\sum_{j\in IND}\left[\text{TARF}_i\times\text{BAS2}_{i,RoW,j,r}\right]\times x2_{i,RoW,j,r}+ \qquad r\in REG \\
&\sum_{i\in COM}\left[\text{TARF}_i\times\text{BAS3}_{i,RoW,r}\right]\times xr\_hous_{i,RoW,r}+ \\
&\sum_{i\in COM}\left[\text{TARF}_i\times\text{BAS5}_{i,RoW,r}\right]\times x\_sg_{i,RoW,r}+ \\
&\sum_{i\in COM}\left[\text{TARF}_i\times\text{CGOV\_SH}_r\times\text{BAS6}_{i,RoW}\right]\times x\_cg_{i,RoW}
\end{aligned}
$$

Nominal regional gross fixed capital expenditure: Equation *E_n2reg*

$$
\left[\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\text{PV2}_{i,s,j,r}\right]\times n2reg_r=\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\text{PV2}_{i,s,j,r}\times\left(x2_{i,s,j,r}+p2_{i,s,j,r}\right) \qquad r\in REG
$$

Nominal regional consumption expenditure: aggregate purchases: Equation *E_n3reg*

$$
\text{CON\_R}_r\times n3reg_r=\sum_{i\in COM}\sum_{s\in SOU}\text{PV3}_{i,s,r}\times\left(p3r_{i,s,r}+xr\_hous_{i,s,r}\right) \qquad r\in REG
$$

Nominal overseas exports from region *r*: Equation *E_n4reg*

$$\mathrm{EXP\_R}_r \times n4reg_r = \sum_{i \in COM} \mathrm{PV4}_{i,r} \times \left(p\_rexp_{i,r} + x\_rate + xr\_exp_{i,r}\right) \qquad r \in REG$$

Index of regional government *r*'s nominal consumption: Equation *E_n5reg*

$$\left[\sum_{i \in COM} \sum_{s \in SOU} \mathrm{PV5}_{i,s,r}\right] \times n5reg_r = \sum_{k \in COM} \sum_{t \in SOU} \mathrm{PV5}_{k,t,r} \times \left(x\_sg_{k,t,r} + p\_sgov_{k,t,r}\right) \qquad r \in REG$$

Commonwealth nominal consumption - region *r*: Equation *E_n6reg*

$$\begin{aligned}
&\mathrm{CGOV_R}_r \times n6reg_r = \\
&\sum_{i \in COM} \mathrm{BAS6}_{i,r} \times \left(x_cg_{i,r} + p_basic_{i,r}\right) + \\
&\sum_{i \in COM} \mathrm{TAX6F}_{i,r} \times \left(x_cg_{i,r} + tax_6ph_{i,r}\right) + \\
&\sum_{i \in COM} \sum_{s \in SOU} \sum_{u \in MAR} \mathrm{MAR6}_{i,s,u,r} \times \left(\mathrm{x}_mar6_{u,r,i,s} + p_basic_{u,r}\right) + \\
&\sum_{i \in COM} \mathrm{CGOV_SH}_r \times \mathrm{BAS6}_{i,\mathrm{RoW}} \times \left(x_cg_{i,\mathrm{RoW}} + p_basic_{i,\mathrm{RoW}}\right)
\end{aligned} \qquad r \in REG$$

Nominal inter-regional exports by region *r*: Equation *E_n_isx*

$$
\begin{aligned}
&\mathrm{ISEXP\_TOT}_s \times n\_isx_s = \\
&\sum_{i\in COM}\sum_{j\in IND}\sum_{r\in REG} \mathrm{BAS1}_{i,s,j,r} \times \left(p\_basic_{i,s} + x1_{i,s,j,r}\right) - \\
&\sum_{i\in COM}\sum_{j\in IND} \mathrm{BAS1}_{i,s,j,s} \times \left(p\_basic_{i,s} + x1_{i,s,j,s}\right) + \\
&\sum_{i\in COM}\sum_{j\in IND}\sum_{r\in REG} \mathrm{BAS2}_{i,s,j,r} \times \left(p\_basic_{i,s} + x2_{i,s,j,r}\right) - \\
&\sum_{i\in COM}\sum_{j\in IND} \mathrm{BAS2}_{i,s,j,s} \times \left(p\_basic_{i,s} + x2_{i,s,j,s}\right) + \\
&\sum_{i\in COM}\sum_{r\in REG} \mathrm{BAS3}_{i,s,r} \times \left(p\_basic_{i,s} + xr\_hous_{i,s,r}\right) - \\
&\sum_{i\in COM} \mathrm{BAS3}_{i,s,s} \times \left(p\_basic_{i,s} + xr\_hous_{i,s,s}\right) + \\
&\sum_{i\in COM}\sum_{r\in REG} \mathrm{BAS5}_{i,s,r} \times \left(p\_basic_{i,s} + x\_sg_{i,s,r}\right) - \\
&\sum_{i\in COM} \mathrm{BAS5}_{i,s,s} \times \left(p\_basic_{i,s} + x\_sg_{i,s,s}\right) + \\
&\sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{r\in REG}\sum_{u\in MAR} \mathrm{MAR1}_{i,t,j,r,u,s} \times \left(p\_basic_{u,s} + x\_mar1_{u,s,i,t,j,r}\right) - \\
&\sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{u\in MAR} \mathrm{MAR1}_{i,t,j,s,u,s} \times \left(p\_basic_{u,s} + x\_mar1_{u,s,i,t,j,s}\right) + \\
&\sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{r\in REG}\sum_{u\in MAR} \mathrm{MAR2}_{i,t,j,r,u,s} \times \left(p\_basic_{u,s} + x\_mar2_{u,s,i,t,j,r}\right) - \\
&\sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{u\in MAR} \mathrm{MAR2}_{i,t,j,s,u,s} \times \left(p\_basic_{u,s} + x\_mar2_{u,s,i,t,j,s}\right) + \\
&\sum_{i\in COM}\sum_{t\in SOU}\sum_{r\in REG}\sum_{u\in MAR} \mathrm{MAR3}_{i,t,r,u,s} \times \left(p\_basic_{u,s} + x\_mar3_{u,s,i,t,r}\right) - \qquad s \in REG \\
&\sum_{i\in COM}\sum_{t\in SOU}\sum_{u\in MAR} \mathrm{MAR3}_{i,t,s,u,s} \times \left(p\_basic_{u,s} + x\_mar3_{u,s,i,t,s}\right) + \\
&\sum_{i\in COM}\sum_{t\in SOU}\sum_{r\in REG}\sum_{u\in MAR} \mathrm{MAR5}_{i,t,r,u,s} \times \left(p\_basic_{u,s} + x\_mar5_{u,s,i,t,r}\right) - \\
&\sum_{i\in COM}\sum_{t\in SOU}\sum_{u\in MAR} \mathrm{MAR5}_{i,t,s,u,s} \times \left(p\_basic_{u,s} + x\_mar5_{u,s,i,t,s}\right)
\end{aligned}
$$

Nominal inter-regional imports into region *r*: Equation *E_n_ism*

$$
\begin{aligned}
&\mathrm{ISIMP\_TOT}_{r} \times n\_ism_{r} = \\
&\sum_{i\in COM}\sum_{s\in REG}\sum_{j\in IND}\mathrm{BAS1}_{i,s,j,r}\times\left(p\_basic_{i,s} + x1_{i,s,j,r}\right) - \\
&\sum_{i\in COM}\sum_{j\in IND}\mathrm{BAS1}_{i,r,j,r}\times\left(p\_basic_{i,r} + x1_{i,r,j,r}\right) + \\
&\sum_{i\in COM}\sum_{s\in REG}\sum_{j\in IND}\mathrm{BAS2}_{i,s,j,r}\times\left(p\_basic_{i,s} + x2_{i,s,j,r}\right) - \\
&\sum_{i\in COM}\sum_{j\in IND}\mathrm{BAS2}_{i,r,j,r}\times\left(p\_basic_{i,r} + x2_{i,r,j,r}\right) + \\
&\sum_{i\in COM}\sum_{s\in REG}\mathrm{BAS3}_{i,s,r}\times\left(p\_basic_{i,s} + xr\_hous_{i,s,r}\right) - \\
&\sum_{i\in COM}\mathrm{BAS3}_{i,r,r}\times\left(p\_basic_{i,r} + xr\_hous_{i,r,r}\right) + \\
&\sum_{i\in COM}\sum_{s\in REG}\mathrm{BAS5}\times\left(p\_basic_{i,r} + x\_sg_{i,r,r}\right) - \\
&\sum_{i\in COM}\mathrm{BAS5}_{i,r,r}\times\left(p\_basic_{i,r} + x\_sg_{i,r,r}\right) + \\
&\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\sum_{t\in REG}\mathrm{MAR1}_{i,s,j,r,u,t}\times\left(p\_basic_{u,t} + x\_mar1_{u,t,i,s,j,r}\right) - \\
&\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\mathrm{MAR1}_{i,s,j,r,u,r}\times\left(p\_basic_{u,r} + x\_mar1_{u,r,i,s,j,r}\right) + \\
&\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\sum_{t\in REG}\mathrm{MAR2}_{i,s,j,r,u,t}\times\left(p\_basic_{u,t} + x\_mar2_{u,t,i,s,j,r}\right) - \\
&\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\mathrm{MAR2}_{i,s,j,r,u,r}\times\left(p\_basic_{u,r} + x\_mar2_{u,r,i,s,j,r}\right) + \\
&\sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\sum_{t\in REG}\mathrm{MAR3}_{i,s,r,u,t}\times\left(p\_basic_{u,t} + x\_mar3_{u,t,i,s,r}\right) - \qquad r \in REG \\
&\sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\mathrm{MAR3}_{i,s,r,u,r}\times\left(p\_basic_{u,r} + x\_mar3_{u,r,i,s,r}\right) + \\
&\sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\sum_{t\in REG}\mathrm{MAR5}_{i,s,r,u,t}\times\left(p\_basic_{u,t} + x\_mar5_{u,t,i,s,r}\right) - \\
&\sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\mathrm{MAR5}_{i,s,r,u,r}\times\left(p\_basic_{u,r} + x\_mar5_{u,r,i,s,r}\right)
\end{aligned}
$$

C.i.f value of imports into region *r*: Equation *E_nMreg*

$$
\begin{aligned}
&\mathrm{IMP\_R}_{r} \times nMreg_{r} = \\
&\sum_{i\in COM}\sum_{j\in IND}\left[\mathrm{TARF}_{i}\times\mathrm{BAS1}_{i,RoW,j,r}\right]\times\left(x1_{i,\,RoW,j,r} + pmp_{i} + x\_rate\right) + \\
&\sum_{i\in COM}\sum_{j\in IND}\left[\mathrm{TARF}_{i}\times\mathrm{BAS2}_{i,RoW,j,r}\right]\times\left(x2_{i,\,RoW,j,r} + pmp_{i} + x\_rate\right) + \\
&\sum_{i\in COM}\left[\mathrm{TARF}_{i}\times\mathrm{BAS3}_{i,RoW,r}\right]\times\left(xr\_hous_{i,RoW,r} + pmp_{i} + x\_rate\right) + \qquad r \in REG \\
&\sum_{i\in COM}\left[\mathrm{TARF}_{i}\times\mathrm{BAS5}_{i,RoW,r}\right]\times\left(x\_sg_{i,RoW,r} + pmp_{i} + x\_rate\right) + \\
&\sum_{i\in COM}\left[\mathrm{TARF}_{i}\times\mathrm{CGOV\_SH}_{r}\times\mathrm{BAS6}_{i,RoW}\right]\times\left(x\_cg_{i,RoW} + pmp_{i} + x\_rate\right)
\end{aligned}
$$

Regional price index of inputs to capital expenditure: Equation *E_p2reg*

$$\left[\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND} PV2_{i,s,j,r}\right] \times p2reg_r = \sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND} PV2_{i,s,j,r} \times \left(p2_{i,s,j,r} + a\_in2_{j,r} + a2isjr_{i,s,j,r}\right) \qquad r \in REG$$

Consumer price index in region *r*: Equation *E_p3reg*

$$p3reg_r = \sum_{s\in SOU}\sum_{i\in COM} \left(W\_3RIS_{i,s,r} \times p3r_{i,s,r}\right) \qquad r \in REG$$

Australian dollar price index for foreign exports from region *r*: Equation *E_p4reg*

$$EXP\_R_r \times p4reg_r = \sum_{i\in COM} PV4_{i,r} \times \left(p\_rexp_{i,r} + x\_rate\right) \qquad r \in REG$$

Index of regional government *r* consumption prices: Equation *E_p5reg*

$$\left[\sum_{i\in COM}\sum_{s\in SOU} PV5_{i,s,r}\right] \times p5reg_r = \sum_{k\in COM}\sum_{t\in SOU} PV5_{k,t,r} \times p\_sgov_{k,t,r} \qquad r \in REG$$

Commonwealth government price index of consumption spending in region *r*: Equation *E_p6reg*

$$CGOV\_R_r \times p6reg_r = \sum_{i\in COM} BAS6_{i,r} \times p\_basic_{i,r} + \sum_{i\in COM} TAX6F_{i,r} \times tax\_6ph_{i,r} + \sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR} MAR6_{i,s,u,r} \times p\_basic_{u,r} + \sum_{i\in COM} CGOV\_SH_r \times BAS6_{i,RoW} \times p\_basic_{i,RoW} \qquad r \in REG$$

Price index of inter-regional exports from region *s*: Equation *E_p_isx*

$$
\begin{aligned}
\text{ISEXP\_TOT}_s \times p\_isx_s = {} & \sum_{i\in COM}\sum_{j\in IND}\sum_{r\in REG} \text{BAS1}_{i,s,j,r} \times p\_basic_{i,s} - \\
& \sum_{i\in COM}\sum_{j\in IND} \text{BAS1}_{i,s,j,s} \times p\_basic_{i,s} + \sum_{i\in COM}\sum_{j\in IND}\sum_{r\in REG} \text{BAS2}_{i,s,j,r} \times x2_{i,s,j,r} - \\
& \sum_{i\in COM}\sum_{j\in IND} \text{BAS2}_{i,s,j,s} \times x2_{i,s,j,s} + \sum_{i\in COM}\sum_{r\in REG} \text{BAS3}_{i,s,r} \times p\_basic_{i,s} - \\
& \sum_{i\in COM} \text{BAS3}_{i,s,s} \times p\_basic_{i,s} + \sum_{i\in COM}\sum_{r\in REG} \text{BAS5}_{i,s,r} \times p\_basic_{i,s} - \\
& \sum_{i\in COM} \text{BAS5}_{i,s,s} \times p\_basic_{i,s} + \\
& \sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{r\in REG}\sum_{u\in MAR} \text{MAR1}_{i,t,j,r,u,s} \times p\_basic_{u,s} - \\
& \sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{u\in MAR} \text{MAR1}_{i,t,j,s,u,s} \times p\_basic_{u,s} + \\
& \sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{r\in REG}\sum_{u\in MAR} \text{MAR2}_{i,t,j,r,u,s} \times p\_basic_{u,s} - \\
& \sum_{i\in COM}\sum_{t\in SOU}\sum_{j\in IND}\sum_{u\in MAR} \text{MAR2}_{i,t,j,s,u,s} \times p\_basic_{u,s} + \\
& \sum_{i\in COM}\sum_{t\in SOU}\sum_{r\in REG}\sum_{u\in MAR} \text{MAR3}_{i,t,r,u,s} \times p\_basic_{u,s} - \\
& \sum_{i\in COM}\sum_{t\in SOU}\sum_{u\in MAR} \text{MAR3}_{i,t,s,u,s} \times p\_basic_{u,s} + \\
& \sum_{i\in COM}\sum_{t\in SOU}\sum_{r\in REG}\sum_{u\in MAR} \text{MAR5}_{i,t,r,u,s} \times p\_basic_{u,s} - \qquad s \in REG \\
& \sum_{i\in COM}\sum_{t\in SOU}\sum_{u\in MAR} \text{MAR5}_{i,t,s,u,s} \times p\_basic_{u,s}
\end{aligned}
$$

Price index for inter-regional imports into region *r*: Equation *E_p_ism*

$$\begin{aligned}
\text{ISIMP_TOT}_r \times p_ism_r = & \sum_{i\in COM}\sum_{s\in REG}\sum_{j\in IND}\text{BAS1}_{i,s,j,r}\times p_basic_{i,s} - \\
& \sum_{i\in COM}\sum_{j\in IND}\text{BAS1}_{i,r,j,r}\times p_basic_{i,r} + \\
& \sum_{i\in COM}\sum_{s\in REG}\sum_{j\in IND}\text{BAS2}_{i,s,j,r}\times p_basic_{i,s} - \\
& \sum_{i\in COM}\sum_{j\in IND}\text{BAS2}_{i,r,j,r}\times p_basic_{i,r} + \\
& \sum_{i\in COM}\sum_{s\in REG}\text{BAS3}_{i,s,r}\times p_basic_{i,s} - \\
& \sum_{i\in COM}\text{BAS3}_{i,r,r}\times p_basic_{i,r} + \\
& \sum_{i\in COM}\sum_{s\in REG}\text{BAS5}\times p_basic_{i,r} - \\
& \sum_{i\in COM}\text{BAS5}_{i,r,r}\times p_basic_{i,r} + \\
& \sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\sum_{t\in REG}\text{MAR1}_{i,s,j,r,u,t}\times p_basic_{u,t} - \\
& \sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\text{MAR1}_{i,s,j,r,u,r}\times p_basic_{u,r} + \\
& \sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\sum_{t\in REG}\text{MAR2}_{i,s,j,r,u,t}\times p_basic_{u,t} - \\
& \sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND}\sum_{u\in MAR}\text{MAR2}_{i,s,j,r,u,r}\times p_basic_{u,r} + \\
& \sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\sum_{t\in REG}\text{MAR3}_{i,s,r,u,t}\times p_basic_{u,t} - \\
& \sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\text{MAR3}_{i,s,r,u,r}\times p_basic_{u,r} + \\
& \sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\sum_{t\in REG}\text{MAR5}_{i,s,r,u,t}\times p_basic_{u,t} - \\
& \sum_{i\in COM}\sum_{s\in SOU}\sum_{u\in MAR}\text{MAR5}_{i,s,r,u,r}\times p_basic_{u,r}
\end{aligned} \qquad r \in REG$$

Domestic currency c.i.f price index of foreign imports into region *r*: Equation *E_pMreg*

$$\text{IMP\_R}_r \times pMreg_r = \sum_{i\in COM}\text{IMPI\_R}_{i,r}\times\left(pmp_i + x\_rate\right) \qquad r \in REG$$

Change in region *r*'s nominal trade surplus: Equation *E_is_surplus*

$$100\times is\_surplus_r = \text{ISEXP\_TOT}_r \times n\_isx_r - \text{ISIMP\_TOT}_r \times n\_ism_r \qquad r \in REG$$

Change in region *r*'s nominal overseas surplus: Equation *E_os_surplus*

$$100\times os\_surplus_r = \text{EXP\_R}_r \times n4reg_r - \text{IMP\_R}_r \times nMreg_r \qquad r \in REG$$

Indirect tax revenue by region: Equation *E_itrev_r*

$$\begin{aligned}&\text{INDTAXREV\_R}_{r} \times itrev\_r_{r} = \text{CGR3\_R}_{r} \times b43\_r_{r} + \text{CGR4\_R}_{r} \times \\ &b44\_r_{r} + \text{CGR5\_R}_{r} \times b45\_r_{r} + \text{CGR6\_R}_{r} \times b46\_r_{r} + \text{SGR6}_{r} \times \\ &b36r_{r} + \text{SGR7}_{r} \times b37r_{r} + \sum_{i \in \text{COM}} \text{TOT\_PHANT2}_{ir} \times phantotal2_{ir}\end{aligned} \qquad r \in \text{REG}$$

Tariff revenue by region: Equation *E_b43_r*

$$\text{CGR3\_R}_{r} \times b43\_r_{r} = \sum_{i \in \text{COM}} \text{MZ\_R}_{i,r} \times \left(g\_tar_{i} + ximp\_r_{i,r}\right) \qquad r \in \text{REG}$$

Production tax revenue by region: Equation *E_b44_r*

$$\text{CGR4\_R}_{r} \times b44\_r_{r} = \sum_{j \in \text{IND}} \text{MX2}_{j,r} \times \left(cpptax_{j,r} + xcptax_{j,r}\right) \qquad r \in \text{REG}$$

Sales tax revenue by region: Equation *E_b45_r*

$$\begin{aligned}&b45\_r_{r} = \sum_{i \in \text{COM}} \sum_{s \in \text{SOU}} \sum_{j \in \text{IND}} \text{BCR\_S12}_{i,s,j,r,\text{Int}} \times \left(x1_{i,s,j,r} + g\_cint_{i,s,j,r,Int}\right) + \\ &\sum_{i \in \text{COM}} \sum_{s \in \text{SOU}} \sum_{j \in \text{IND}} \text{BCR\_S12}_{i,s,j,r,\text{Kap}} \times \left(x2_{i,s,j,r} + g\_cint_{i,s,j,r,Kap}\right) + \\ &\sum_{i \in \text{COM}} \sum_{s \in \text{SOU}} \text{BCR\_S3}_{i,s,r} \times \left(g\_ctax_{i,s,r} + xr\_hous_{i,s,r}\right)\end{aligned} \qquad r \in \text{REG}$$

Export tax revenue by region: Equation *E_b46_r*

$$\text{CGR6\_R}_{r} \times b46\_r_{r} = \sum_{i \in \text{COM}} \text{TAX4}_{i,r,\text{Fed}} \times \left(g\_extax_{i,r} + xr\_exp_{i,r}\right) \qquad r \in \text{REG}$$

Real gross regional expenditure: Equation *E_rgre*

$$\begin{aligned}&\text{GRE}_{r} \times rgre_{r} = \text{CON\_R}_{r} \times x3reg_{r} + \\ &\text{INV\_R}_{r} \times x2reg_{r} + \text{SGOV\_R}_{r} \times x5reg_{r} \times \text{CGOV\_R}_{r} + x6reg_{r}\end{aligned} \qquad r \in \text{REG}$$

12. NATIONAL ACCOUNTS

Real GDP-Expenditure side: Equation *E_r_gdpe*

$$\begin{aligned}\text{BASE\_GDP} \times r\_gdpe &= \left[\sum_{r \in REG} \text{CON\_R}_r\right] \times x3nat \\ &+ \left[\sum_{r \in REG} \text{INV\_R}_r\right] \times x2nat + \left[\sum_{r \in REG} \text{SGOV\_R}_r\right] \times x5nat \\ &+ \left[\sum_{r \in REG} \text{CGOV\_R}_r\right] \times x6nat + \left[\sum_{r \in REG} \text{EXP\_R}_r\right] \times x4nat \\ &- \left[\sum_{r \in REG} \text{IMP\_R}_r\right] \times xMnat\end{aligned}$$

Nominal GDP-Expenditure side: Equation *E_n_gdpe*

$$\begin{aligned}\text{BASE\_GDP} \times n\_gdpe &= \sum_{r \in REG} \text{CON\_R}_r \times n3nat \\ &+ \sum_{r \in REG} \text{INV\_R}_r \times n2nat + \sum_{r \in REG} \text{SGOV\_R}_r \times n5nat \\ &+ \sum_{r \in REG} \text{CGOV\_R}_r \times n6nat + \sum_{r \in REG} \text{EXP\_R}_r \times n4nat \\ &- \sum_{r \in REG} \text{IMP\_R}_r \times nMnat\end{aligned}$$

GDP Deflator: Equation *E_gdp_def*

$$\begin{aligned}\text{BASE\_GDP} \times gdp\_def &= \left[\sum_{r \in REG} \text{CON\_R}_r\right] \times p3nat \\ &+ \left[\sum_{r \in REG} \text{INV\_R}_r\right] \times p2nat + \left[\sum_{r \in REG} \text{SGOV\_R}_r\right] \times p5nat \\ &+ \left[\sum_{r \in REG} \text{CGOV\_R}_r\right] \times p6nat + \left[\sum_{r \in REG} \text{EXP\_R}_r\right] \times p4nat \\ &- \left[\sum_{r \in REG} \text{IMP\_R}_r\right] \times pMnat\end{aligned}$$

National nominal GDP income side: Equation *E_n_gdpi*

$$\left[\sum_{t \in REG} \text{GDPI\_R}_t\right] \times n\_gdpi = \sum_{r \in REG} \text{GDPI\_R}_r \times n\_grpi_r$$

National real GDP income side: Equation *E_r_gdpi*

$$\left[\sum_{t\in REG} GDPI\_R_t\right]\times r\_gdpi = \sum_{r\in REG} GDPI\_R_r \times r\_grpi_r$$

Nominal GDP at factor cost: Equation *E_n_gdpfc1*

$$[BASE\_GDP - INDTAXREV]\times n\_gdpfc1 =$$
$$BASE\_GDP \times n\_gdpe - INDTAXREV \times itrev$$

Real GDP at factor cost - definition 1: Equation *E_r_gdpfc1*

$$[BASE\_GDP - INDTAXREV]\times r\_gdpfc1 =$$
$$\sum_{r\in REG}[BASE\_GSP_r - INDTAXREV\_r_r]\times r\_grpfc1_r$$

Real GDP at factor cost: Equation *E_r_gdpfc2*

$$\left[\sum_{r\in REG} GSP\_FACR_r\right]\times r\_gdpfc2 = \sum_{t\in REG} GSP\_FACR_t \times r\_grpfc2_t$$

Nominal GDP at factor cost: Equation *E_n_gdpfc2*

$$\left[\sum_{r\in REG} GSP\_FACR_r\right]\times n\_gdpfc2 = \sum_{t\in REG} GSP\_FACR_t \times n\_grpfc2_t$$

Real GDP at factor cost - value added weights: Equation *E_r_gdpfc3*

$$\left[\sum_{j\in IND}\sum_{r\in REG} PRIMTOT_{j,r}\right]\times r\_gdpfc3 = \sum_{r\in REG}\sum_{j\in IND} PRIMTOT_{j,r} \times r\_grpfc3_r$$

Nominal GDP at factor cost: production approach: Equation *E_n_gdpfc3*

$$\left[\sum_{j\in IND}\sum_{r\in REG} PRIMTOT_{j,r}\right]\times n\_gdpfc3 = \sum_{r\in REG}\sum_{j\in IND} PRIMTOT_{j,r} \times n\_grpfc3_r$$

Real national gross fixed capital expenditure: Equation *E_x2nat*

$$\left[\sum_{r\in REG}\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND} PV2_{i,s,j,r}\right]\times x2nat =$$
$$\sum_{r\in REG}\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND} PV2_{i,s,j,r}\times\left(x2_{i,s,j,r} - a\_in2_{j,r} - a2isjr_{i,s,j,r}\right)$$

Quantity index of real national consumption: Equation *E_x3nat*

$$\left[\sum_{t\in REG} CON\_R_t\right] \times x3nat = \sum_{r\in REG} CON\_R_r \times x3reg_r$$

National index of real exports: Equation *E_x4nat*

$$\left[\sum_{r\in REG} EXP\_R_r\right] \times x4nat = \sum_{r\in REG} EXP\_R_r \times x4reg_r$$

Economy-wide regional government real consumption spending: Equation *E_x5nat*

$$\left[\sum_{r\in REG}\sum_{i\in COM}\sum_{s\in SOU} PV5_{i,s,r}\right] \times x5nat = \sum_{r\in REG}\sum_{k\in COM}\sum_{t\in SOU} PV5_{k,t,r} \times x\_sg_{k,t,r}$$

Economy-wide Commonwealth Government real consumption: Equation *E_x6nat*

$$\left[\sum_{k\in COM}\sum_{t\in SOU} PVCG_{k,t}\right] \times x6nat = \sum_{i\in COM}\sum_{s\in SOU} PVCG_{i,s} \times x\_cg_{i,s}$$

National real import volume: Equation *E_xMnat*

$$\left[\sum_{r\in REG} IMP\_R_r\right] \times xMnat = \sum_{r\in REG} IMP\_R_r \times xMreg_r$$

Nominal gross fixed capital expenditure: Equation *E_n2nat*

$$\left[\sum_{r\in REG}\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND} PV2_{i,s,j,r}\right] \times n2nat =$$
$$\sum_{r\in REG}\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND} PV2_{i,s,j,r} \times \left(x2_{i,s,j,r} + p2_{i,s,j,r}\right)$$

Nominal national consumption expenditure: aggregate purchases: Equation *E_n3nat*

$$\left[\sum_{t\in REG} CON\_R_t\right] \times n3nat = \sum_{r\in REG} CON\_R_r \times n3reg_r$$

Index of national nominal ($A) exports: Equation *E_n4nat*

$$\left[\sum_{r\in REG} EXP\_R_r\right] \times n4nat = \sum_{r\in REG} EXP\_R_r \times n4reg_r$$

Economy-wide regional government nominal consumption spending: Equation *E_n5nat*

$$\left[\sum_{r\in REG}\sum_{i\in COM}\sum_{s\in SOU} PV5_{i,s,r}\right]\times n5nat = \sum_{r\in REG}\sum_{k\in COM}\sum_{t\in SOU} PV5_{k,t,r}\times\left(x\_sg_{k,t,r} + p\_sgov_{k,t,r}\right)$$

Commonwealth Government nominal consumption spending: Equation *E_n6nat*

$$\left[\sum_{k\in COM}\sum_{t\in SOU} PVCG_{k,t}\right]\times n6nat = \sum_{i\in COM}\sum_{s\in SOU} PVCG_{i,s}\times\left(x\_cg_{i,s} + p\_cgov_{i,s}\right)$$

National domestic currency c.i.f import values: Equation *E_nMnat*

$$\left[\sum_{r\in REG} IMP\_R_r\right]\times nMnat = \sum_{r\in REG} IMP\_R_r \times nMreg_r$$

National price index of inputs to capital creation: Equation *E_p2nat*

$$\left[\sum_{r\in REG}\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND} PV2_{i,s,j,r}\right]\times p2nat = \sum_{r\in REG}\sum_{i\in COM}\sum_{s\in SOU}\sum_{j\in IND} PV2_{i,s,j,r}\times\left(p2_{i,s,j,r} + a\_in2_{j,r} + a2isjr_{i,s,j,r}\right)$$

National consumer price index: Equation *E_p3nat*

$$p3nat = \sum_{r\in REG}\left(W\_3R_r \times p3reg_r\right)$$

National export price index - domestic currency: Equation *E_p4nat*

$$\sum_{r\in REG} EXP\_R_r \times p4nat = \sum_{r\in REG} EXP\_R_r \times p4reg_r$$

National index of regional government consumption prices: Equation *E_p5nat*

$$\left[\sum_{r\in REG}\sum_{i\in COM}\sum_{s\in SOU} PV5_{i,s,r}\right]\times p5nat = \sum_{r\in REG}\sum_{k\in COM}\sum_{t\in SOU} PV5_{k,t,r}\times p\_sgov_{k,t,r}$$

Economy-wide Commonwealth government consumption price index: *E_p6nat*

$$\left[\sum_{k\in COM}\sum_{t\in SOU} PVCG_{k,t}\right]\times p6nat = \sum_{i\in COM}\sum_{s\in SOU} PVCG_{i,s}\times p\_cgov_{i,s}$$

National domestic currency c.i.f import price index: Equation *E_pMnat*

$$\left[\sum_{r\in REG} IMP\_R_r\right] \times pMnat = \sum_{r\in REG} IMP\_R_r \times pMreg_r$$

National indirect tax revenue collection: Equation *E_itrev*

$$INDTAXREV \times itrev = \sum_{r\in REG} INDTAXREV\_R_r \times itrev\_r_r$$

Real gross national expenditure: Equation *E_real_gne*

$$GNE \times real\_gne = \left[\sum_{r\in REG} CON\_R_r\right] \times x3nat + \left[\sum_{r\in REG} INV\_R_r\right]$$
$$\times x2nat + \left[\sum_{r\in REG} SGOV\_R_r\right] \times x5nat + CGO1 \times x6nat$$

Price index for gross national expenditure: Equation *E_p_gne*

$$GNE \times p\_gne = \left[\sum_{r\in REG} CON\_R_r\right] \times p3nat + \left[\sum_{r\in REG} INV\_R_r\right]$$
$$\times p2nat + \left[\sum_{r\in REG} SGOV\_R_r\right] \times p5nat + CGO1 \times p6nat$$

13. OTHER MACROECONOMIC AGGREGATES

The terms of trade: Equation *E_toft*

$$toft = p4nat - pMnat$$

Foreign currency value of national imports: Equation *E_imports*

$$imports = \sum_{i \in COM} \text{MSHARE}_i \times (pmp_i + x\_imp_i)$$

Foreign currency value of national exports: Equation *E_e*

$$e = \sum_{u \in COM} \sum_{r \in REG} \text{ESHARE}_{u,r} \times (p\_rexp_{u,r} + xr\_exp_{u,r})$$

The change in the foreign currency balance of trade: Equation *E_ChB*

$$100 \times Chb = \text{AGG\_E} \times e - \text{AGG\_M} \times imports$$

Employment in region *r*: Equation *E_lr_emp*

$$lr\_emp_r = \sum_{m \in OCC} \text{E\_OCC}_{m,r} \times lrm\_emp_{m,r} \qquad r \in REG$$

National employment: Equation *E_l_emp*

$$l\_emp = \sum_{r \in REG} \text{E\_REG}_r \times lr\_emp_r$$

Aggregate regional capital stock, rental weights: Equation *E_k_rst*

$$k\_rst_r = \sum_{j \in IND} \text{K\_IND}_{j,r} \times cap\_at\_t_{j,r} \qquad r \in REG$$

Aggregate national capital stock, rental weights: Equation *E_kst*

$$kst = \sum_{r \in REG} \text{K\_REG}_r \times k\_rst_r$$

Regional capital stocks, asset value weights: Equation E_k_rst_a

$$\sum_{j \in IND} VCAP\_AT\_T_{j,r} \times k\_rst\_a_r = \sum_{j \in IND} VCAP\_AT\_T_{j,r} \times cap\_at\_t_{j,r} \qquad r \in REG$$

National capital stocks, asset value weights: Equation E_kst_a

$$\sum_{j \in IND} \sum_{r \in REG} VCAP\_AT\_T_{j,r} \times kst\_a = \sum_{j \in IND} \sum_{r \in REG} VCAP\_AT\_T_{j,r} \times cap\_at\_t_{j,r}$$

National number of unemployed: Equation *E_nat_unemp*

$$\left[\sum_r \{LAB\_FORCE_r - EMP\_R_r\}\right] \times nat\_unemp = \sum_r [LAB\_FORCE_r - EMP\_R_r] \times x\_unemp_r$$

14. REGIONAL POPULATION AND LABOUR FORCE

Number of unemployed in region *r*: Equation *E_x_unemp*

$$[\text{LAB\_FORCE}_r - \text{EMP\_R}_r] \times x\_unemp_r = \text{LAB\_FORCE}_r \times lr\_force_r - \text{EMP\_R}_r \times lr\_emp_r \qquad r \in REG$$

Regional labour force: Equation *E_lr_force*

$$lr\_force_r = pop\_15_r + p\_pp\_rate_r \qquad r \in REG$$

Regional participation rates: Equation *E_p_pp_rate*

$$p\_pp\_rate_r = fr\_ppr_r + fgen\_ppr \qquad r \in REG$$

Regional unemployment rate: Equation *E_p_ue_rate*

$$p\_ue\_rate_r = x\_unemp_r - lr\_force_r \qquad r \in REG$$

Number of households in region *r*: Equation *E_qhous*

$$qhous_r = pop\_15_r - a\_qhous_r \qquad r \in REG$$

Change in the net migrant population: Equation *E_ch_migrant*

$$ch\_migrants = \text{ADJ\_COEFF\_M} \times (\text{DES\_MIGRANTS} - \text{MIGRANTS\_15}) \times del\_unity\_m2 + f\_ch\_migrants$$

Change in the base population of region *r* via natural population growth: Equation *E_del_basepop*

$$del\_basepop_r = [\text{BASE\_15\_PLUS}_r \times \text{NATGROWTH}_r] \times del\_unity\_m1 + \text{BASE\_15\_PLUS}_r \times f\_del\_basepop_r \qquad r \in REG$$

Resident population aged 15+; region 1: Equation *E_f_pop_15A*

$$pop\_15_1 = [100 / (\text{BASE\_15\_PLUS}_1 - \text{MIGRANTS\_15})] \times (del\_basepop_1 - ch\_migrants) + f\_pop\_15_1$$

Resident population aged 15+; region 2: Equation *E_f_pop_15B*

$$pop\_15_2 = [100 / (\text{BASE\_15\_PLUS}_2 + \text{MIGRANTS\_15})] \times (del\_basepop_2 + ch\_migrants) + f\_pop\_15_2$$

Change in expected non-capital income in region *r*: Equation *E_ch_income*

$$100 \times ch\_income_r = [\text{EXP\_WAGE}_r / \text{L\_CPI}_r] \times p\_exp\_wage_r + [\text{EXP\_UEB}_r / \text{L\_CPI}_r] \times p\_exp\_ueb_r + [\text{NET\_FISCAL}_r / \text{L\_CPI}_r] \times p\_net\_fiscal_r - [\text{REAL\_EXP\_PCY}_r] \times p3reg_r \qquad r \in REG$$

Expected per-person nominal wage in region *r*: Equation *E_p_exp_wage*

$$\text{EXP\_WAGE}_r \times p\_exp\_wage_r = [\text{NET\_WAGE}_r / \text{EMP\_R}_r] \times (wageinc_r - lr\_emp_r) - [(\text{UE\_RATE}_r \times \text{NET\_WAGE}_r) / \text{EMP\_R}_r] \times (p\_ue\_rate_r + wageinc_r - lr\_emp_r) \qquad r \in REG$$

After tax labour income in region *r*: Equation *E_wageinc*

$$\sum_{u \in OCC} \sum_{j \in IND} \text{MU1}_{u,j,r} \times wageinc_r = \sum_{m \in OCC} \sum_{j \in IND} \text{MU1}_{m,j,r} \times (postwage_{m,j,r} + x\_lab_{m,j,r}) \qquad r \in REG$$

Expected per-person nominal unemployment benefit: Equation *E_p_exp_ueb*

$$p\_exp\_ueb_r = punb + p\_ue\_rate_r \qquad r \in REG$$

Expected per-person nominal net fiscal benefit in region *r*: Equation *E_p_net_fiscal*

$$[\text{SGO1}_r + \text{SGO3}_r + \text{CGO5}_r - \text{SGR4}_r - \text{SGR8}_r - \text{CGR7}_r] \times (p\_net\_fiscal_r + pop\_15_r) = \text{SGO1}_r \times n5reg_r + \text{SGO3}_r \times t51_r + \text{CGO5}_r \times t62_r - \text{SGR4}_r \times b34r_r - \text{SGR8}_r \times b38r_r - \text{CGR7}_r \times b47 \qquad r \in REG$$

15. PHANTOM TAXES

Non-traditional export prices: Equation *E_p_rexp_exog*

$$p\_rexp_{i,r} = p\_rexp\_exog_{i,r} - fpentrad \qquad \begin{array}{l} i \in NTRAD \\ r \in REG \end{array}$$

Prices of exogenous export commodities: Equation *E_p_rexp_imp*

$$p\_rexp_{i,r} = p\_rexp\_imp_{i,r} - fpentrad \qquad \begin{array}{l} i \in EXOG \\ r \in REG \end{array}$$

Phantom tax per unit of intermediate input: Equation *E_tax_1ph*

$$\begin{array}{l} tax\_1ph_{i,s} = \text{HPHANT1} \times p3reg_s + \\ \text{HPHANT2} \times \left(tax\_sph_{i,s} + p\_basic_{i,s}\right) + \\ \text{HPHANT3} \times tax\_sph_{i,s} \end{array} \qquad \begin{array}{l} i \in COM \\ s \in REG \end{array}$$

Phantom tax per unit of input to capital creation: Equation *E_tax_2ph*

$$\begin{array}{l} tax\_2ph_{i,s,r} = \text{HPHANT1} \times p3reg_s + \\ \text{HPHANT2} \times \left(tax\_sph_{i,s} + p\_basic_{i,s} + fphtax2_r + fphtax2isr_{i,s,r}\right) + \\ \text{HPHANT3} \times \left(tax\_sph_{i,s} + fphtax2_r + fphtax2isr_{i,s,r}\right) \end{array} \qquad \begin{array}{l} i \in COM \\ s \in REG \\ r \in REG \end{array}$$

Phantom tax per unit household consumption: Equation *E_tax_3ph*

$$\begin{array}{l} tax\_3ph_{i,s,r} = \text{HPHANT1} \times p3reg_s + \\ \text{HPHANT2} \times \left(tax\_sph_{i,s} + p\_basic_{i,s} + fphtax3_{i,s,r} + fphtax3r_r\right) + \\ \text{HPHANT3} \times \left(tax\_sph_{i,s} + fphtax3_{i,s,r} + fphtax3r_r\right) \end{array} \qquad \begin{array}{l} i \in COM \\ s \in REG \\ r \in REG \end{array}$$

Phantom tax per unit of exports: Equation *E_tax_4ph*

$$\begin{array}{l} tax\_4ph_{i,s} = \text{HPHANT1} \times p3reg_s + \\ \text{HPHANT2} \times \left(tax\_sph_{i,s} + tax\_nsph_{i,s} + p\_basic_{i,s}\right) + \\ \text{HPHANT3} \times \left(tax\_sph_{i,s} + tax\_nsph_{i,s}\right) \end{array} \qquad \begin{array}{l} i \in COM \\ s \in REG \end{array}$$

Phantom tax per unit of state government purchases: Equation *E_tax_5ph*

$$\begin{array}{l} tax\_5ph_{i,s,r} = \text{HPHANT1} \times p3reg_s + \\ \text{HPHANT2} \times \left(tax\_sph_{i,s} + p\_basic_{i,s} + fphtax5_r + fphtax5isr_{i,s,r}\right) + \\ \text{HPHANT3} \times \left(tax\_sph_{i,s} + fphtax5_r + fphtax5isr_{i,s,r}\right) \end{array} \qquad \begin{array}{l} i \in COM \\ s \in REG \\ r \in REG \end{array}$$

Phantom tax per unit of Commonwealth Government purchase: Equation *E_tax_6ph*

$$tax\_6ph_{i,s} = \text{HPHANT1} \times p3reg_s + \text{HPHANT2} \times \left(tax\_sph_{i,s} + p\_basic_{i,s} + fphtax6_s + fphtax6is_{i,s}\right) + \text{HPHANT3} \times \left(tax\_sph_{i,s} + fphtax6_s + fphtax6is_{i,s}\right) \qquad \begin{array}{l} i \in COM \\ s \in REG \end{array}$$

Total phantom taxes collected on intermediate goods: Equation *E_total_phant1*

$$\left[\sum_{j \in IND} \sum_{r \in REG} \text{TAX1F}_{i,s,j,r}\right] \times total\_phant1_{i,s} = \sum_{j \in IND} \sum_{r \in REG} \left\{ \text{TAX1F}_{i,s,j,r} \times \left(tax\_1ph_{i,s} + x1_{i,s,j,r}\right) \right\} \qquad \begin{array}{l} i \in \text{COM} \\ s \in \text{REG} \end{array}$$

Total phantom taxes collected on inputs to capital creation: Equation *E_total_phant2*

$$\left[\sum_{j \in IND} \sum_{r \in REG} \text{TAX2F}_{i,s,j,r}\right] \times total\_phant2_{i,s} = \sum_{j \in IND} \sum_{r \in REG} \left\{ \text{TAX2F}_{i,s,j,r} \times \left(tax\_2ph_{i,s,r} + x2_{i,s,j,r}\right) \right\} \qquad \begin{array}{l} i \in \text{COM} \\ s \in \text{REG} \end{array}$$

Total phantom taxes collected on sales to households: Equation *E_total_phant3*

$$total\_phant3_{i,s} = tax\_3ph_{i,s,r} + xr\_hous_{i,s,r} \qquad \begin{array}{l} i \in \text{COM} \\ s \in \text{REG} \end{array}$$

Total phantom taxes collected on export sales: Equation *E_total_phant4*

$$total\_phant4_{i,s} = tax\_4ph_{i,s} + xr\_exp_{i,s} \qquad \begin{array}{l} i \in \text{COM} \\ s \in \text{REG} \end{array}$$

Total phantom taxes collected on sales to regional governments: Equation *E_total_phant5*

$$\left[\sum_{r \in REG} \text{TAX5F}_{i,s,r}\right] \times total\_phant5_{i,s} = \sum_{r \in REG} \text{TAX5F}_{i,s,r} \times \left(tax\_5ph_{i,s,r} + x\_sg_{i,s,r}\right) \qquad \begin{array}{l} i \in \text{COM} \\ s \in \text{REG} \end{array}$$

Total phantom taxes collected on sales to Commonwealth Government: Equation *E_total_phant6*

$$total\_phant6_{i,s} = tax\_6ph_{i,s} + x\_cg_{i,s} \qquad \begin{array}{l} i \in \text{COM} \\ s \in \text{REG} \end{array}$$

Total phantom taxes accruing on good *i* from region *s*: Equation *E_phantotal*

$$\begin{aligned}
&\mathrm{TOT_PHANT}_{i,s} \times phantotal_{i,s} = \\
&\left[\sum_{j\in IND}\sum_{r\in REG}\mathrm{TAX1F}_{i,s,j,r}\right]\times total_phant1_{i,s} + \\
&\left[\sum_{j\in IND}\sum_{r\in REG}\mathrm{TAX2F}_{i,s,j,r}\right]\times total_phant2_{i,s} + \\
&\sum_{r\in REG}\mathrm{TAX3F}_{i,s,r}\times total_phant3_{i,s,r} + \\
&\left[\sum_{r\in REG}\mathrm{TAX5F}_{i,s,r}\right]\times total_phant5_{i,s} + \mathrm{TAX4F}_{i,s}\times total_phant4_{i,s} + \\
&\mathrm{TAX6F}_{i,s}\times total_phant6_{i,s}
\end{aligned}$$

i ∈ COM
s ∈ REG

Total phantom taxes accruing on good *i* within region *r*: Equation *E_phantotal2*

$$\begin{aligned}
&\mathrm{TOT_PHANT2}_{i,r} \times phantotal2_{i,r} = \\
&\sum_{s\in REG}\sum_{j\in IND}\mathrm{TAX1F}_{i,s,j,r}\times\left(tax_1ph_{i,s} + x1_{i,s,j,r}\right)+ \\
&\sum_{s\in REG}\sum_{j\in IND}\mathrm{TAX2F}_{i,s,j,r}\times\left(tax_2ph_{i,s,r} + x2_{i,s,j,r}\right)+ \\
&\sum_{s\in REG}\mathrm{TAX3F}_{i,s,r}\times\left(tax_3ph_{i,s,r} + xr_hous_{i,s,r}\right)+ \\
&\sum_{s\in REG}\mathrm{TAX5F}_{i,s,r}\times\left(tax_5ph_{i,s,r} + x_sg_{i,s,r}\right)+ \\
&\mathrm{TAX4F}_{i,r}\times\left(tax_4ph_{i,r} + xr_exp_{i,r}\right)+ \\
&\mathrm{TAX6F}_{i,r}\times\left(tax_6ph_{i,r} + x_cg_{i,r}\right)
\end{aligned}$$

i ∈ COM
r ∈ REG

Phantom tax revenue accruing to households in region r" Equation *E_p_housphant*

$$\begin{aligned}
&\mathrm{HOUS_PHANT}_{r} \times p_housphant_{r} = \\
&\sum_{i\in COM}\sum_{s\in REG}\left[\mathrm{TOT_PHANT}_{i,s}\times\mathrm{HH_PHANT}_{i,s,r}\right]\times phantotal_{i,s}
\end{aligned}$$

r ∈ REG

Power of the phantom tax on inputs to investment: Equation *E_powtax1ph*

$$\begin{aligned}
&\mathrm{POWTAX1}_{i,s,r} \times powtax1ph_{i,s,r} = \\
&\left[\left[\sum_{j\in IND}\mathrm{TAX1F}_{i,s,j,r} + \mathrm{TINY}\right]\Big/\left[\sum_{j\in IND}\mathrm{BAS1}_{i,s,j,r} + \mathrm{TINY}\right]\right] \\
&\times\left(tax_1ph_{i,s,r} - p_basic_{i,s}\right)
\end{aligned}$$

i ∈ COM
s ∈ REG
r ∈ REG

Power of the phantom tax on inputs to investment: Equation *E_powtax2ph*

$$\begin{aligned}&\mathrm{POWTAX2}_{i,s,r} \times powtax2ph_{i,s,r} = \\ &\left[\left[\sum_{j\in IND}\mathrm{TAX2F}_{i,s,j,r} + \mathrm{TINY}\right] \Big/ \left[\sum_{j\in IND}\mathrm{BAS2}_{i,s,j,r} + \mathrm{TINY}\right]\right] \\ &\times \left(tax\_2ph_{i,s,r} - p\_basic_{i,s}\right)\end{aligned} \qquad \begin{array}{l} i \in COM \\ s \in REG \\ r \in REG \end{array}$$

Power of the phantom tax on inputs to households: Equation *E_powtax3ph*

$$\begin{aligned}&\left[\mathrm{POWTAX3}_{i,s,r} + \mathrm{TINY}\right] \times powtax3ph_{i,s,r} = \\ &\left[\left(\mathrm{TAX3F}_{i,s,r} + \mathrm{TINY}\right) / \left(\mathrm{BAS3}_{i,s,r} + \mathrm{TINY}\right)\right] \times \left(tax\_3ph_{i,s,r} - p\_basic_{i,s}\right)\end{aligned} \qquad \begin{array}{l} i \in COM \\ s \in REG \\ r \in REG \end{array}$$

Power of the phantom tax on export sales: Equation *E_powtax4ph*

$$\begin{aligned}&\mathrm{POWTAX4}_{i,r} \times powtax4ph_{i,r} = \\ &\left[\mathrm{TAX4F}_{i,r} / \mathrm{BAS4}_{i,r}\right] \times \left(tax\_4ph_{i,r} - p\_basic_{i,r}\right)\end{aligned} \qquad \begin{array}{l} i \in COM \\ r \in REG \end{array}$$

Power of the phantom tax on inputs to regional governments: Equation *E_powtax5ph*

$$\begin{aligned}&\left[\mathrm{POWTAX5}_{i,s,r} + \mathrm{TINY}\right] \times powtax5ph_{i,s,r} = \\ &\left[\left(\mathrm{TAX5F}_{i,s,r} + \mathrm{TINY}\right) / \left(\mathrm{BAS5}_{i,s,r} + \mathrm{TINY}\right)\right] \times \left(tax\_5ph_{i,s,r} - p\_basic_{i,s}\right)\end{aligned} \qquad \begin{array}{l} i \in COM \\ s \in REG \\ r \in REG \end{array}$$

Power of the phantom tax on inputs to the Commonwealth Government: Equation *E_powtax6ph*

$$\begin{aligned}&\left[\mathrm{POWTAX6}_{i,s} + \mathrm{TINY}\right] \times powtax6ph_{,s} = \\ &\left[\left(\mathrm{TAX6F}_{i,s} + \mathrm{TINY}\right) / \left(\mathrm{BAS6}_{i,s} + \mathrm{TINY}\right)\right] \times \left(tax\_6ph_{i,s} - p\_basic_{i,s}\right)\end{aligned} \qquad \begin{array}{l} i \in COM \\ s \in REG \end{array}$$

Change in the phantom tax collections on inputs to current production: Equation *E_del_tax_1ph*

$$del\_tax\_1ph_{i,s,j,r} = \left[\mathrm{TAX1F}_{i,s,j,r} / 100\right] \times \left(x1_{i,s,j,r} + tax\_1ph_{i,s,r}\right) \qquad \begin{array}{l} i \in COM \\ s \in REG \\ j \in IND \\ r \in REG \end{array}$$

Change in the phantom tax collections on inputs to capital creation: Equation *E_del_tax_2ph*

$$del\_tax\_2ph_{i,s,j,r} = \left[\mathrm{TAX2F}_{i,s,j,r} / 100\right] \times \left(x2_{i,s,j,r} + tax\_2ph_{i,s,r}\right) \qquad \begin{array}{l} i \in COM \\ s \in REG \\ j \in IND \\ r \in REG \end{array}$$

Change in the phantom tax collections on inputs to households: Equation *E_del_tax_3ph*

$$del\_tax\_3ph_{i,s,r} = \left[\text{TAX3F}_{i,s,r}/100\right] \times \left(xr\_hous_{i,s,r} + tax\_3ph_{i,s,r}\right)$$

i ∈ COM
s ∈ REG
r ∈ REG

Change in phantom tax collections on export sales: Equation *E_del_tax_4ph*

$$del\_tax\_4ph_{i,r} = \left[\text{TAX4F}_{i,r}/100\right] \times \left(xr\_exp_{i,r} + tax\_4ph_{i,r}\right)$$

i ∈ COM
r ∈ REG

Change in the phantom tax collections on inputs to regional governments: Equation *E_del_tax_5ph*

$$del\_tax\_5ph_{i,s,r} = \left[\text{TAX5F}_{i,s,r}/100\right] \times \left(x\_sg_{i,s,r} + tax\_5ph_{i,s,r}\right)$$

i ∈ COM
s ∈ REG
r ∈ REG

Change in the phantom tax collections on inputs to the Commonwealth Government: Equation *E_del_tax_6ph*

$$del\_tax\_6ph_{i,s} = \left[\text{TAX6F}_{i,s}/100\right] \times \left(x\_cg_{i,s} + tax\_6ph_{i,s}\right)$$

i ∈ COM
s ∈ REG

Setting of non-spreading phantom taxes in deviation closure: Equation *E_tax_nsph_old*

$$tax\_nsph_{i,s} = x4\_tax + tax\_nsph\_old_{i,s} + \text{DAMP} \times \left(xr\_exp_{i,s} - xr\_exp\_old_{i,s}\right)$$

i ∈ COM
s ∈ REG

Setting of spreading phantom taxes in deviation closure: Equation *E_tax_sph_old*

$$tax\_sph_{i,s} = x4\_tax + tax\_sph\_old_{i,s} + \text{DAMP} \times \left(xr\_exp_{i,s} - xr\_exp\_old_{i,s}\right)$$

i ∈ COM
s ∈ REG

Phantom tax allocation to regional government *r*: Equation *E_phant_rgov*

$$\text{SGOV\_PHANT}_r \times phant\_rgov_r = \sum_{i \in \text{COM}} \left[\text{TOT\_PHANT}_{i,r} \times \text{HH\_PHANT}_{i,r,\text{sgov}}\right] \times phantotal_{i,r}$$

r ∈ REG

Phantom tax allocation to the Commonwealth Government: Equation *E_phant_cgov*

$$\text{CGOV\_PHANT} \times phant\_cgov = \sum_{i \in \text{COM}} \sum_{s \in \text{REG}} \left[\text{TOT\_PHANT}_{i,s} \times \text{HH\_PHANT}_{i,s,\text{cgov}}\right] \times phantotal_{i,s}$$

16. IMPORT/LOCAL PREFERENCE TWISTS

Technical change related to cost neutral import / domestic twists, current production: Equation *E_a1twistD*

$$a1twist_{i,s,j,r} = \left[\mathrm{SH1}_{i,\mathrm{RoW},j,r} / \mathrm{BETA1}_{i,j,r} \right] \times twist\_srcr_{i,r}$$

i ∈ COM
s ∈ REG
j ∈ IND
r ∈ REG

Technical change related to cost neutral import / domestic twists, current production: Equation *E_a1twistM*

$$a1twist_{i,RoW,j,r} = \left[\left(1 - \mathrm{SH1}_{i,\mathrm{RoW},j,r}\right) \Big/ \left(-1 \times \mathrm{BETA1}_{i,j,r}\right) \right] \times twist\_srcr_{i,r}$$

i ∈ COM
j ∈ IND
r ∈ REG

Import / domestic twist terms, current production: Equation *E_twist1*

$$twist1_{i,s,j,r} = a1twist_{i,s,j,r} - \mathrm{ZIG1}_{i,s,j,r} \times \left[a1twist_{i,s,j,r} - \sum_{t \in SOU} \mathrm{SHSTAR1}_{i,t,j,r} \times a1twist_{i,t,j,r} \right]$$

i ∈ COM
s ∈ SOU
j ∈ IND
r ∈ REG

Technical change related to cost neutral import / domestic twists, capital creation: Equation *E_a2twistD*

$$a2twist_{i,s,j,r} = \left[\mathrm{SH2}_{i,\mathrm{RoW},j,r} / \mathrm{BETA2}_{i,j,r} \right] \times twist\_srcr_{i,r}$$

i ∈ COM
s ∈ REG
j ∈ IND
r ∈ REG

Technical change related to cost neutral import / domestic twists, capital creation: Equation *E_a2twistM*

$$a2twist_{i,RoW,j,r} = \left[\left(1 - \mathrm{SH2}_{i,\mathrm{RoW},j,r}\right) \Big/ \left(-1 \times \mathrm{BETA2}_{i,j,r}\right) \right] \times twist\_srcr_{i,r}$$

i ∈ COM
j ∈ IND
r ∈ REG

Import / domestic twist terms, capital creation: Equation *E_twist2*

$$twist2_{i,s,j,r} = a2twist_{i,s,j,r} - \mathrm{ZIG2}_{i,s,j,r} \times \left[a2twist_{i,s,j,r} - \sum_{t \in SOU} \mathrm{SHSTAR2}_{i,t,j,r} \times a2twist_{i,t,j,r} \right]$$

i ∈ COM
s ∈ SOU
j ∈ IND
r ∈ REG

Technical change related to cost neutral import / domestic twists, household consumption: Equation *E_a3twistD*

$$a3twist_{i,s,r} = \left[\left(\mathrm{SH3}_{i,RoW,r}\right) / \left(\mathrm{BETA3}_{i,r}\right) \right] \times twist\_srcr_{i,r}$$

i ∈ COM
s ∈ REG
r ∈ REG

Technical change related to cost neutral import / domestic twists, household consumption: Equation *E_a3twistM*

$$a3twist_{i,RoW,r} = \left[1 - \mathrm{SH3}_{i,RoW,r} / -1 \times \mathrm{BETA3}_{i,r} \right] \times twist\_srcr_{i,r}$$

i ∈ COM
r ∈ REG

Import / domestic twist terms, households consumption: Equation *E_twist3*

$$twist3_{i,s,r} = a3twist_{i,s,r} - \mathrm{ZIG3}_{i,s,r} \times \left[a3twist_{i,s,r} - \sum_{t \in SOU} \mathrm{SHSTAR3}_{i,t,r} \times a3twist_{i,t,r} \right]$$

i ∈ COM
s ∈ SOU
r ∈ REG

Cost neutral shift in the ratio of imported to domestic good *i* in region *r*: Equation *E_ftwist_srcr*

$$twist\_srcr_{i,r} = twist\_src\_bar + ftwist\_srcr_{i,r} + ftwist\_src_i + \mathrm{C\_TWIST\_SRC} \times \left(x\_total_i - r\_gdpe\right)$$

i ∈ COM
r ∈ REG

User specific inter-regional sourcing twist: User 1: Equation *E_ftwist_is1*

$$twist\_is1_{i,j,r} = twist\_isbot_i + ftwist\_is1_{i,j,r}$$

i ∈ COM
j ∈ IND
r ∈ REG

User specific inter-regional sourcing twist: User 2: Equation *E_ftwist_is2*

$$twist\_is2_{i,j,r} = twist\_isbot_i + ftwist\_is2_{i,j,r}$$

i ∈ COM
j ∈ IND
r ∈ REG

User specific inter-regional sourcing twist: User 1: Equation *E_ftwist_is3*

$$twist\_is3_{i,r} = twist\_isbot_i + ftwist\_is3_{i,r} \qquad \begin{array}{l} i \in COM \\ r \in REG \end{array}$$

Commodity-specific inter-regional sourcing twists: Equation *E_fi_twist_isbot*

$$twist\_isbot_i = ftwist\_isbot + fi\_twist\_isbot_i + \text{XIS\_DAMP1}_i \times \left[x\_total_{i,A1} - r\_grpfc1_{A1}\right] + \sum_{s=\text{QMAPNO}_i}^{\text{QMAPNO}_i} twist\_is\_s_s + \text{XIS\_DAMP2}_i \times \left[x\_total_{i,A1} - \sum_{s=\text{QMAPNO}_i}^{\text{QMAPNO}_i} x\_sr_{s,A1} \right] \qquad i \in COM$$

17. GST SUB - MODULE

Relative ANTS prices: Equation *E_rel_p_ants*

$$p\_basic_{i,r} = rel\_p\_ants_{i,r} + gen\_pants \qquad \begin{array}{l} i \in COM \\ r \in REG \end{array}$$

Consumer prices relative to CPI: Equation *E_rel_p3r*

$$p3r_{i,s,r} = rel\_p3r_{i,s,r} + gen\_p3 \qquad \begin{array}{l} i \in COM \\ s \in SOU \\ r \in REG \end{array}$$

Equation *E_sum_p_ants*

$$\left[\sum_{s \in REG}\sum_{i \in COM} SALES_{i,s}\right] \times sum\_p\_ants = \sum_{i \in COM}\left[\sum_{k \in REG} SALES_{i,k}\right] \times p\_ants_i$$

Link household price of Dwellings to ANTS price: Equation *E_rel_p3_dwell*

$$p3_{"Dwellings",r} = rel\_p3\_dwell_r + gen\_p3 \qquad r \in REG$$

Economy-wide basic price of commodity *i*: Equation *E_tp_basic*

$$\left[\sum_{s \in REG} SALES_{i,s}\right] \times tp\_basic_i = \sum_{t \in REG} SALES_{i,t} \times p\_basic_{i,t} \qquad i \in COM$$

Equation *E_p_antsA*

$$p\_ants_i = tp\_basic_i \qquad i \in NONDWELL$$

Equation *E_p_antsB*

$$\left[\sum_{s \in SOU}\sum_{r \in REG} PV3_{"Dwellings",s,r}\right] \times p\_ants_{"Dwellings"} = \sum_{s \in SOU}\sum_{r \in REG} PV3_{"Dwellings",s,r} \times p3r_{"Dwellings",s,r}$$

Change in Commonwealth Government production tax receipts: Equation *E_Ch_CWr_prodt*

$$100 \times Ch\_CWr\_prodt = \sum_{j \in IND}\sum_{r \in REG} MX_{j,r} \times \left(cpptax_{j,r} + xcptax_{j,r}\right)$$

Change in Commonwealth Government commodity tax receipts: Equation *E_Ch_CWr_comt*

$$100 \times Ch\_CWr\_comt = \left[\sum_{i \in COM} \sum_{s \in SOU} \sum_{j \in IND} \sum_{r \in REG} \left(TAX1_{i,s,j,r,Fed} + TAX2_{i,s,j,r,Fed} \right) + \sum_{i \in COM} \sum_{s \in SOU} \sum_{r \in REG} TAX3_{i,s,r,Fed} \right] \times b45$$

Change in Commonwealth Government PAYE tax receipts: Equation *E_Ch_CWr_paye*

$$100 \times Ch\_CWr\_paye = \left[\sum_{q \in OCC} \sum_{j \in IND} \sum_{r \in REG} MU2_{q,j,r} \right] \times b41$$

Change in Commonwealth Government business tax receipts: Equation *E_Ch_CW_btax*

$$100 \times Ch\_CWr\_btax = \left[\sum_{q \in OWNERS} \sum_{j \in IND} \sum_{r \in REG} \left(MV2_{q,j,r} + MW2_{q,j,r} \right) \right] \times b42$$

Change in Commonwealth Government personal benefit payment outlays: Equation *E_Ch_CWo_pbp*

$$100 \times Ch\_CWo\_pbp = \left[\sum_{r \in REG} \left(CGO3_r + CGO5_r \right) \right] \times pbp\_nom$$

Change in regional government business franchise taxes: Equation *E_Ch_RGr_bft*

$$100 \times Ch\_RGr\_bft_r = \sum_{i \in BFT} \sum_{s \in SOU} \sum_{j \in IND} \sum_{t \in REG} TAX1_{i,s,j,t,r} \times \left(g\_sint_{i,s,j,t,"Int"} + x1_{i,s,j,t} \right) + \sum_{i \in BFT} \sum_{s \in SOU} \sum_{j \in IND} \sum_{t \in REG} TAX2_{i,s,j,t,r} \times \left(g\_sint_{i,s,j,r,"Kap"} + x2_{i,s,j,r} \right) + \sum_{i \in BFT} \sum_{s \in SOU} \sum_{t \in REG} TAX3_{i,s,t,r} \times \left(g\_stax_{i,s,r} + xr\_hous_{i,s,r} \right) \qquad r \in REG$$

18. SET DESCRIPTIONS AND ELEMENTS

COM Commodities. There are 37 commodities in the present implementation of the model, being: *1.Rural, 2.Forestry and logging, 3.Fishing and hunting, 4.Mining, 5.Meat small goods and poultry, 6.Milk products, 7.Fruit and vegetables, 8.Processed seafood's, 9.Confectionary and cocoa, 10.Cereal products, 11.Beverages and malts, 12.Tobacco, 13.Textile clothing and footwear, 14.Logs sawmill woodchips, 15.Joinery, 16.Paper products, 17.Printing, 18.Chemicals, 19.Petroleum, 20.Non-metallic mineral products, 21.Iron ore and basic metal products, 22.Structural metal products, 23.Motor vehicles and ships, 24.Machinery equipment and miscellaneous, 25.Electricity, 26.Other utilities, 27.Residential building, 28.Other construction, 29.Trade and insurance, 30.Transport and storage, 31.Restaurants and hotels, 32.Commununications, 33.Finance, 34.Dwellings, 35.Public Administration, 36.Community services*, and *37.Entertainment and recreation.*

IND Industries. There are 37 industries in the present implementation of the model, being: *1.Rural, 2.Forestry and logging, 3.Fishing and hunting, 4.Mining, 5.Meat small goods and poultry, 6.Milk products, 7.Fruit and vegetables, 8.Processed seafood's, 9.Confectionary and cocoa, 10.Cereal products, 11.Beverages and malts, 12.Tobacco, 13.Textile clothing and footwear, 14.Logs sawmill woodchips, 15.Joinery, 16.Paper products, 17.Printing, 18.Chemicals, 19.Petroleum, 20.Non-metallic mineral products, 21.Iron ore and basic metal products, 22.Structural metal products, 23.Motor vehicles and ships, 24.Machinery equipment and miscellaneous, 25.Electricity, 26.Other utilities, 27.Residential building, 28.Other construction, 29.Trade and insurance, 30.Transport and storage, 31.Restaurants and hotels, 32.Commununications, 33.Finance, 34.Dwellings, 35.Public Administration, 36.Community services*, and *37.Entertainment and recreation.*

SOU Domestic and foreign sources for commodities. There are three commodity sources in the present implementation of the model, being: *1. Tasmania ("A1"), 2. Rest of Australia ("A2"), 3. Overseas ("RoW").*

REG Domestic regions. There are two domestic regions in the present implementation of the model, being: *1. Tasmania ("A1"), 2. Rest of Australia ("A2").*

MAR Margin commodities. There are three margin commodities in the present implementation of the model, being: *1.Trade and insurance, 2.Transport and storage, 3.Restaurants and hotels.*

NONMAR Non-margin Commodities. There are 34 non margin commodities in the present implementation of the model, being: *1.Rural, 2.Forestry and logging, 3.Fishing and hunting, 4.Mining, 5.Meat small goods and poultry, 6.Milk products, 7.Fruit and vegetables, 8.Processed seafood's, 9.Confectionary and cocoa, 10.Cereal products, 11.Beverages and malts, 12.Tobacco, 13.Textile clothing and footwear, 14.Logs sawmill woodchips, 15.Joinery, 16.Paper products, 17.Printing, 18.Chemicals, 19.Petroleum, 20.Non-metallic mineral products, 21.Iron ore and basic metal products, 22.Structural metal products, 23.Motor vehicles and ships, 24.Machinery equipment and miscellaneous, 25.Electricity, 26.Other utilities, 27.Residential building, 28.Other construction, 29.Commununications, 30.Finance, 31.Dwellings, 32.Public Administration, 33.Community services*, and *34.Entertainment and recreation.*

TRAD Traditional export commodities. There are seven traditional export commodities in the present implementation of the model, being: *1.Rural, 2.Fishing and hunting, 3.Mining, 4.Meat small goods and poultry, 5.Processed seafood's, 6.Textile clothing and footwear, 7.Iron ore and basic metal products.*

NTRAD Non-traditional (endogenous) export commodities. There are 28 non-traditional export commodities in the present implementation of the model, being: *1.Forestry and logging, 2.Milk products, 3.Fruit and vegetables, 4.Confectionary and cocoa, 5.Cereal products, 6.Beverages and malts, 7.Tobacco, 8.Logs sawmill woodchips, 9.Joinery, 10.Paper products, 11.Printing, 12.Chemicals, 13.Petroleum, 14.Non-metallic mineral products, 15.Structural metal products, 16.Motor vehicles and ships, 17.Machinery equipment and miscellaneous, 18.Electricity, 19.Other utilities, 20.Other construction, 21.Trade and insurance, 22.Transport and storage, 23.Restaurants and hotels, 24.Commununications, 25.Finance, 26.Public Administration, 27.Community services*, and *28.Entertainment and recreation.*

EXOG Set of exogenous export commodities. There are two exogenous export commodities in the present implementation of the model, being: *1.Residential building*, and *2.Dwellings*.

NONDWELL All industries other than Dwellings. There are 36 non-dwellings industries in the present implementation of the model, being: *1.Rural, 2.Forestry and logging, 3.Fishing and hunting, 4.Mining, 5.Meat small goods and poultry, 6.Milk products, 7.Fruit and vegetables, 8.Processed seafood's, 9.Confectionary and cocoa, 10.Cereal products, 11.Beverages and malts, 12.Tobacco, 13.Textile clothing and footwear, 14.Logs sawmill woodchips, 15.Joinery, 16.Paper products, 17.Printing, 18.Chemicals, 19.Petroleum, 20.Non-metallic mineral products, 21.Iron ore and basic metal products, 22.Structural metal products, 23.Motor vehicles and ships, 24.Machinery equipment and miscellaneous, 25.Electricity, 26.Other utilities, 27.Residential building, 28.Other construction, 29.Trade and insurance, 30.Transport and storage, 31.Restaurants and hotels, 32.Commununications, 33.Finance, 34.Public Administration, 35.Community services*, and *36.Entertainment and recreation.*

JSET Endogenous private investment industries. There are 37 such industries in the present implementation of the model, being: *1.Rural, 2.Forestry and logging, 3.Fishing and hunting, 4.Mining, 5.Meat small goods and poultry, 6.Milk products, 7.Fruit and vegetables, 8.Processed seafood's, 9.Confectionary and cocoa, 10.Cereal products, 11.Beverages and malts, 12.Tobacco, 13.Textile clothing and footwear, 14.Logs sawmill woodchips, 15.Joinery, 16.Paper products, 17.Printing, 18.Chemicals, 19.Petroleum, 20.Non-metallic mineral products, 21.Iron ore and basic metal products, 22.Structural metal products, 23.Motor vehicles and ships, 24.Machinery equipment and miscellaneous, 25.Electricity, 26.Other utilities, 27.Residential building, 28.Other construction, 29.Trade and insurance, 30.Transport and storage, 31.Restaurants and hotels, 32.Commununications, 33.Finance, 34.Dwellings, 35.Public Administration, 36.Community services*, and *37.Entertainment and recreation.*

GBE Industries featuring some government ownership of their capital (government business enterprises). There are four such industries in the present implementation of the model, being: *1.Electricity, 2.Other utilities, 3.Commununications, 4.Public Administration,*

NOTGBE Industries other than GBE industries, being: IND - GBE;

AGG Set of agricultural industries. There is one such industry in the present implementation of the model, being: *1.Rural*

NONAGG Set of non agricultural industries, being: IND - AGG

UTILITY Utility industries. There are two such industries in the present implementation of the model, being: *1.Electricity, 2.Other utilities.*

OWNERS Owners of primary factors. There are five such owners in the present implementation of the model, being: *1.Foreign, 2.Commonwealth Government, 3.Regional government, 4.Tasmanian households, 5.Rest of Australian households.*

NGOWNERS Non-government owners of primary factors. There are three such owners in the present implementation of the model, being: *1.Foreign, 2.Tasmanian households, 3.Rest of Australian households.*

GOWNERS Government owners of primary factors. There are two such owners in the present implementation of the model, being: *1.Commonwealth Government, 2.Regional government.*

DOMPRIV Domestic private owners of primary factors. There are two such owners in the present implementation of the model, being *1.Tasmanian households, 2.Rest of Australian households.*

OWNERS2 Expanded ownership list required for tracking ownership of capital. There are six such owners in the present implementation of the model, being: *1.Foreign, 2.Commonwealth Government, 3.Tasmanian Regional government, 4.Mainland Regional government, 5.Tasmanian households, 6.Rest of Australian households.*

GOV Government types. There are two regional governments, and one Commonwealth Government identified in the present implementation of the model: *1.Tasmania, 2.Rest of Australia* and *3.Federal.*

OCC Occupational types. There are eight occupational types identified in the present implementation of the model.

FAC Primary factors. There are three primary factors identified in the present implementation of the model, being: *1.Labour, 2.Capital, 3.Land.*

PUR Purposes towards which purchased commodities are used. There are two purposes, being: *1.Intermediate ("Int"), 2.Capital input ("Kap").*

NSR Regional government receipts. Eleven such receipts are identified, being: *1.Payroll tax, 2.Residential land tax, 3.Commercial land tax, 4.Income reducing taxes, 5.Commonwealth transfers, 6.Commodity tax receipts, 7.Production tax receipts, 8.Other receipts, 9.GBE profits, 10.Residual foreign receipts, 11.Phantom tax revenue.*

BFT Commodities on which regional government business franchise taxes are levied. There are three such commodities in the present implementation: *1.Beverages and malts, 2.Tobacco, 3.Petroleum.*

XCOMO National accounts sectors for which extraneous output data are available. In the present implementation of the model these are: *1.Agriculture, 2.Forestry and fishing, 3.Mining, 4.Food etc., 5.Textiles etc., 6.Wood etc., 7.Printing etc., 8.Petroleum etc., 9.Non-metallic mineral products, 10.Metal products, 11.Machinery and other, 12.Electricity, 13.Other utilities, 14.Construction, 15. Trade, 16.Accommodation, 17.Transport and storage, 18.Communications, 19.Finance, 20.Public administration and defence, 21.Community services, 22.Recreational and personal services.*

NCOM National accounts consumption commodities. In the present implementation of the model these are: *1. Food, 2. Alcoholic beverages, 3. Tobacco prods, 4. Clothing, 5. Footwear, 6. Doctors, dentists, hospitals, 7. Health insurance, 8. Medicines, 9. Actual and imputed rents, 10. Other dwelling services, 11. Gas, 12. Electricity, 13. Other fuels, 14. Furniture and floorcovers, 15. Household textiles, 16. Heating, cooking appliances, 17. Newspapers books magazines, 18. Electronics durables other, 19. Perfumes cosmetics etc., 20. Non durable household goods, 21. Personal effects, 22. Purchase of vehicles, 23. Motor vehicle insurance, 24. Repairs and misc. motor veh. expenses, 25. Motoring goods, 26. Rail services, 27. Bus taxi hirecar, 28. Air travel, 29. Sea travel, 30. Postal services, 31. Telecommunication services, 32. Life ins. super. work-comp. financial services, 33. Education plus HECS, 34. Recreation and cultural services, 35. Other services, 36. Catering - meals with service, 37. Accommodation, 38. Other*

XINDN Sectors for which extraneous national investment data are available. In the present implementation of the model these are: *1. Agriculture, forestry, fishing, 2. Mining, 3. Food, Beverage and Tobacco Manufacturing, 4. Textile Clothing Footwear and Leather Manufacture, 5. Wood and Paper Products, 6. Printing, Publication and Recording Media, 7. Petroleum, Coal, Chemicals etc, 8. Non-Metallic Minerals Products, 9. Metal products, 10. Machinery and Other, 11. Electricity, gas, water, 12. Construction, 13. Wholesale and retail trade, 14. Transport and storage, 15. Accommodation, cafes, restaurants, 16. Communications, 17. Finance, property, business services, insurance, 18. Ownership of dwellings, 19. Government Administration and Defence, 20. Community services, 21. Recreation, personal, and other services, ,*

IND22 Sectors for which extraneous employment data are available. In the present implementation of the model these are: *1. Agriculture, 2. Forestry, 3. Fishing, 4. Mining, 5. Food etc., 6. Textiles etc, 7. Wood etc., 8. Printing etc., 9. Petroleum etc, 10. Non-met mineral products, 11. Metal products, 12. Machinery and other, 13. Utilities, 14. Construction, 15. Trade, 16. Accommodation etc., 17. Transport and storage., 18. Communications, 19. Finance, 20. Public admin., 21. Community services, 22. Recreation.*

IND12 Summary 12 industry classification (useful for reporting purposes): *1. Agriculture, 2. Mining, 3. Manufacturing, 4. Utilities, 5. Construction, 6. Margin industries, 7. Communications, 8. Finance, 9. Dwellings, 10. Public administration, 11. Community services, 12. Entertainment and recreation.*

COM12 Summary 12 commodity classification (useful for reporting purposes): *1. Agriculture, 2. Mining, 3. Manufacturing, 4. Utilities, 5. Construction, 6. Margin industries, 7. Communications, 8. Finance, 9. Dwellings, 10. Public administration, 11. Community services, 12. Entertainment and recreation.*

QINDEXNO(1) *1.Rural.*

QINDEXNO(2) *2.Forestry and logging, 3.Fishing and hunting*

QINDEXNO(3) *4.Mining.*

QINDEXNO(4) *5.Meat small goods and poultry, 6.Milk products, 7.Fruit and vegetables, 8.Processed seafood's, 9.Confectionary and cocoa, 10.Cereal products, 11.Beverages and malts, 12.Tobacco.*

QINDEXNO(5) *13.Textile clothing and footwear.*

QINDEXNO(6) *14.Logs sawmill woodchips, 15.Joinery, 16.Paper products.*

QINDEXNO(7) *17.Printing.*

QINDEXNO(8) *18.Chemicals, 19.Petroleum.*

QINDEXNO(9) *20.Non-metallic mineral products.*

QINDEXNO(10) *21.Iron ore and basic metal products, 22.Structural metal products.*

QINDEXNO(11) *23.Motor vehicles and ships, 24.Machinery equipment and miscellaneous.*

QINDEXNO(12) *25.Electricity.*

QINDEXNO(13) *26.Other utilities.*

QINDEXNO(14) *27.Residential building, 28.Other construction.*

QINDEXNO(15) *29.Trade and insurance.*

QINDEXNO(16) *30.Transport and storage.*

QINDEXNO(17) *31.Restaurants and hotels.*

QINDEXNO(18) *32.Commununications.*

QINDEXNO(19) *33.Finance.*

QINDEXNO(20) *34.Dwellings.*

QINDEXNO(21) *35.Public Administration.*

QINDEXNO(22) *36.Community services.*

QINDEXNO(23) *37.Entertainment and recreation.*

QMAPNO(1): *1.*
QMAPNO(2): *2.*
QMAPNO(3): *2.*
QMAPNO(4): *3.*
QMAPNO(5): *4.*
QMAPNO(6): *4.*
QMAPNO(7): *4.*
QMAPNO(8): *4.*
QMAPNO(9): *4.*
QMAPNO(10): *4.*
QMAPNO(11): *4.*
QMAPNO(12): *4.*
QMAPNO(13): *5.*
QMAPNO(14): *6.*
QMAPNO(15): *6.*
QMAPNO(16): *6.*
QMAPNO(17): *7.*
QMAPNO(18): *8.*
QMAPNO(19): *8.*
QMAPNO(20): *9.*
QMAPNO(21): *10.*
QMAPNO(22): *10.*
QMAPNO(23): *11.*
QMAPNO(24): *11.*
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QMAPNO(29): *15.*
QMAPNO(30): *17.*
QMAPNO(31): *16.*
QMAPNO(32): *18.*
QMAPNO(33): *19.*
QMAPNO(34): *23.*
QMAPNO(35): *20.*
QMAPNO(36): *21.*
QMAPNO(37): *22.*

EMPNO22(1): *1.Rural.*

EMPNO22(2): *2.Forestry and logging.*

EMPNO22(3): *3.Fishing and hunting.*

EMPNO22(4): *4.Mining.*

EMPNO22(5): *5.Meat small goods and poultry, 6.Milk products, 7.Fruit and vegetables, 8.Processed seafood's, 9.Confectionary and cocoa, 10.Cereal products, 11.Beverages and malts, 12.Tobacco.*

EMPNO22(6): *13.Textile clothing and footwear.*

EMPNO22(7): *14.Logs sawmill woodchips, 15.Joinery, 16.Paper products.*

EMPNO22(8): *17.Printing.*

EMPNO22(9): *18.Chemicals, 19.Petroleum.*

EMPNO22(10): *20.Non-metallic mineral products.*

EMPNO22(11): *21.Iron ore and basic metal products, 22.Structural metal products.*

EMPNO22(12): *23.Motor vehicles and ships, 24.Machinery equipment and miscellaneous.*

EMPNO22(13): *25.Electricity, 26.Other utilities.*

EMPNO22(14): *27.Residential building, 28.Other construction.*

EMPNO22(15): *29.Trade and insurance.*

EMPNO22(16): *31.Restaurants and hotels.*

EMPNO22(17): *30.Transport and storage.*

EMPNO22(18): *32.Commununications.*

EMPNO22(19): *33.Finance.*

EMPNO22(20): *35.Public Administration.*

EMPNO22(21): *36.Community services.*

EMPNO22(22): *37.Entertainment and recreation.*

EMPNO22(23): *34.Dwellings.*

ENO22(1): *1.*
ENO22(2): *2.*
ENO22(3): *3.*
ENO22(4): *4.*
ENO22(5): *5.*
ENO22(6): *5.*
ENO22(7): *5.*
ENO22(8): *5.*
ENO22(9): *5.*
ENO22(10): *5.*
ENO22(11): *5.*
ENO22(12): *5.*
ENO22(13): *6.*
ENO22(14): *7.*
ENO22(15): *7.*
ENO22(16): *7.*
ENO22(17): *8.*
ENO22(18): *9.*
ENO22(19): *9.*
ENO22(20): *10.*
ENO22(21): *11.*
ENO22(22): *11.*
ENO22(23): *12.*
ENO22(24): *12.*
ENO22(25): *13.*
ENO22(26): *13.*
ENO22(27): *14.*
ENO22(28): *14.*
ENO22(29): *15.*
ENO22(30): *17.*
ENO22(31): *16.*
ENO22(32): *18.*
ENO22(33): *19.*
ENO22(34): *23.*
ENO22(35): *20.*
ENO22(36): *21.*
ENO22(37): *22.*

SNO(1): *1.Rural. 2.Forestry and logging. 3.Fishing and hunting.*

SNO(2): *4.Mining,*

SNO(3): *5.Meat small goods and poultry, 6.Milk products, 7.Fruit and vegetables, 8.Processed seafood's, 9.Confectionary and cocoa, 10.Cereal products, 11.Beverages and malts, 12.Tobacco.*

SNO(4): *13.Textile clothing and footwear.*

SNO(5): *14.Logs sawmill woodchips, 15.Joinery, 16.Paper products.*

SNO(6): *17.Printing,*

SNO(7): *18.Chemicals, 19.Petroleum,*

SNO(8): *20.Non-metallic mineral products,*

SNO(9): *21.Iron ore and basic metal products, 22.Structural metal products,*

SNO(10): *23.Motor vehicles and ships, 24.Machinery equipment and miscellaneous,*

SNO(11): *25.Electricity, 26.Other utilities,*

SNO(12): *27.Residential building, 28.Other construction,*

SNO(13): *29.Trade and insurance,*

SNO(14): *30.Transport and storage,*

SNO(15): *31.Restaurants and hotels,*

SNO(16): *32.Commununications,*

SNO(17): *33.Finance,*

SNO(18): *34.Dwellings,*

SNO(19): *35.Public Administration,*

SNO(20): *36.Community services,*

SNO(21): *37.Entertainment and recreation.*

JNO(1): *1* .
JNO(2): *1* .
JNO(3): *1* .
JNO(4): *2* .
JNO(5): *3* .
JNO(6): *3* .
JNO(7): *3* .
JNO(8): *3* .
JNO(9): *3* .
JNO(10): *3* .
JNO(11): *3* .
JNO(12): *3* .
JNO(13): *4* .
JNO(14): *5* .
JNO(15): *5* .
JNO(16): *5* .
JNO(17): *6* .
JNO(18): *7* .
JNO(19): *7* .
JNO(20): *8* .
JNO(21): *9* .
JNO(22): *9* .
JNO(23): *10* .
JNO(24): *10* .
JNO(25): *11* .
JNO(26): *11* .
JNO(27): *12* .
JNO(28): *12* .
JNO(29): *13* .
JNO(30): *14* .
JNO(31): *15* .
JNO(32): *16* .
JNO(33): *17* .
JNO(34): *18* .
JNO(35): *19* .
JNO(36): *20* .
JNO(37): *21*

APPENDIX B. FEDERAL-F VARIABLE LISTING

Variable	Subscript Range	Description	Closure[1]
$a\_fac_{v,j,r}$	v∈FAC j∈IND r∈REG	Primary factor *v* augmenting technical change experienced by regional industry *j,r*.	N
$a\_in1_{j,r}$	j∈IND r∈REG	All input augmenting technical change in current production for industry *j,r*.	X
$a\_in2_{j,r}$	j∈IND r∈REG	All input augmenting technical change in capital formation for industry *j,r*.	X
a_qhous_r	r∈ REG	Average no. of people aged 15+ per household in region *r*.	X
$a1isjr_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Source-specific commodity *i* saving technical change in intermediate input usage for regional industry *j,r*.	N
$a2isjr_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Source-specific commodity *i* saving technical change in input usage to capital formation, for regional industry *j,r*.	N
$a1mar_{u,r,i,s,j,t}$	u∈MAR r∈REG i∈COM s∈SOU j∈IND t∈REG	Technical change on margin usage - current production.	N
$a2mar_{u,r,i,s,j,t}$	u∈MAR r∈REG i∈COM s∈SOU j∈IND t∈REG	Technical change on margin usage - capital formation.	N
$a3mar_{u,t,i,s,r}$	u∈MAR t∈REG i∈COM s∈SOU r∈REG	Technical change on margin usage - household purchases.	N
$a4mar_{u,t,i,r}$	u∈MAR t∈REG i∈COM r∈REG	Technical change on margin usage - exports.	N

[1] This column describes the status of the variables under a standard short-run comparative static closure. Departures from this closure, to establish historical, decomposition, forecasting, and deviation closures, are discussed in the relevant sections of this paper/thesis. "X" denotes exogenously determined, and "N" denotes endogenously determined.

$a5mar_{u,t,i,s,r}$	u∈MAR t∈REG i∈COM s∈SOU r∈REG	Technical change on margin usage - State government purchases.	N
$a6mar_{u,t,i,s}$	u∈MAR t∈REG i∈COM s∈SOU	Technical change on margin usage - Commonwealth purchases.	N
$a1twist_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈ REG	Import/domestic twist technical change: current production.	N
$a2twist_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈ REG	Import/domestic twist technical change: capital creation.	N
$a3twist_{i,s,r}$	i∈COM s∈SOU r∈ REG	Import/domestic twist technical change: Household consumption.	N
$a3_{k,r}$	k∈com r∈ REG	Composite commodity *k* augmenting change in household preferences.	N
$a3ncom_{na,r}$	na∈NCOM r∈ REG	Taste change for national accounts commodities.	X
$a3shift_{i,r}$	i∈COM r∈ REG	Consumption shifter for FEDERAL-F commodities.	N
ai_i	i∈COM	Commodity *i* using technical change.	X
$ais_{i,s}$	i∈COM s∈SOU	Commodity *i,s* using technical change.	X
ave_a3_r	r∈ REG	Average value of $a3_{i,r}$.	N
b1_6		Commonwealth revenue from taxes, fees, and fines.	N
b1_6r		Commonwealth real revenue from taxes, fees, and fines.	N
$b34r_r$	r∈ REG	Regional government income-reducing taxes payments.	N
$b35r_r$	r∈ REG	Transfers from the Commonwealth Government to regional government *r*.	N
$b36r_r$	r∈ REG	Commodity tax receipts by regional government *r*.	N
$b37r_r$	r∈ REG	Regional government *r* production tax receipts.	N
$b38r_r$	r∈ REG	Other receipts by regional government *r*.	N

b4		Commonwealth Government receipts.	N
b41		Commonwealth Government PAYE receipts.	N
$b41r_r$	r∈ REG	Commonwealth Government PAYE receipts by region.	N
b42		Commonwealth Government income tax receipts from capital and land rentals.	N
$b42r_r$	r∈ REG	Commonwealth Government income tax receipts from capital and land rentals, by region.	N
b43		Commonwealth Government receipts from import duties.	N
$b43\_r_r$	r∈ REG	Commonwealth Government receipts from import duties, by region.	N
b44		Commonwealth Government production tax receipts	N
$b44\_r_r$	r∈ REG	Commonwealth Government production tax revenue, by region.	N
b45		Total Commonwealth Government revenue from sales taxes.	N
$b45\_r_r$	r∈ REG	Commonwealth Government sales tax revenue, by region.	N
b46		Total Commonwealth Government receipts from net export taxes .	N
$b46\_r_r$	r∈ REG	Commonwealth Government net export tax revenue, by region.	N
b47		Other Commonwealth Government receipts.	N
b47r		Real other Commonwealth Government receipts.	N
$b5r_r$	r∈ REG	Aggregate nominal outlays by regional government *r*.	N
b6		Aggregate Commonwealth Government outlays.	N
$cap\_at\_t_{j,r}$	j∈IND r∈ REG	Capital stock at t (start of simulation year).	X
$cap\_at\_tplus1_{j,r}$	j∈IND r∈ REG	Capital stock at t+1 (end of simulation year).	N
$cb1r_r$	r∈ REG	Change ($m) in public sector borrowing requirement of regional government *r*.	N
cb2		Change ($m) in PSBR of Commonwealth Government.	N
$cfprodjr_{j,r}$	j∈IND r∈ REG	Commonwealth regional industry specific production tax shift.	X
$cfprodjr_{j,r}$	j∈IND r∈ REG	Commonwealth regional industry specific production tax shift.	X
$cgbedpi_r$	r∈REG	Returns from Commonwealth Government's ownership of capital.	N

Ch_CWo_pbp		Change in Commonwealth Government personal benefit payment outlays.	N
Ch_CWr_btax		Change in Commonwealth Government business tax receipts.	N
Ch_CWr_comt		Change in Commonwealth Government commodity tax receipts.	N
Ch_CWr_paye		Change in Commonwealth Government PAYE tax receipts.	N
Ch_CWr_prodt		Change in Commonwealth Government production tax receipts.	N
ch_income_r	r∈REG	Change in the measure of per-capita income to which inter-regional migration responds.	N
$ch\_kgr1_{j,r}$	j∈IND r∈REG	Reports whether capital growth has fallen below minimum capital growth rate.	N
$ch\_kgr2_{j,r}$	j∈IND r∈REG	Reports whether capital growth has risen above maximum capital growth rate.	N
ch_migrants		Change in the net migrant population.	N
$Ch\_RGr\_bft_r$	r∈REG	Change in regional government business franchise tax receipts.	
chB		Change in the foreign currency value of the balance of trade.	N
$cltax_r$	r∈REG	Aggregate commercial land tax receipts by regional government *r*.	N
cnr_r	r∈REG	Nominal regional household consumption budget.	N
com_tax		General shift variable on Commonwealth Government commodity tax rates.	X
cpi_l		Percentage change in the CPI in year *t*-1.	N
$cpptax_{j,r}$	j∈IND r∈REG	Commonwealth Government production tax per Commonwealth Government production tax unit.	N
cr		Real national household consumption budget.	N
$crates_{j,r}$	j∈IND r∈REG	Percentage change in the expected rate of return on capital: FEDERAL model definition.	N
crr_r	r∈REG	Real consumption budget of households in region *r*.	N
cw3tax		Percentage change in Commonwealth collections of household consumption taxes.	
$d\_diseq_{j,r}$	j∈IND r∈REG	Difference between the expected rate of return and the equilibrium expected rate of return.	N
$d\_eeqror_{j,r}$	j∈IND r∈REG	Change in the equilibrium expected rate of return.	N

$d\_eror_{j,r}$	j∈IND r∈REG	Percentage point change in expected rates of return by regional industry.	N
d_f_cpi_l		Shift variable on Equation *E_d_f_cpi_l*.	X
$d\_f\_diseq_{j,r}$	j∈IND r∈REG	Shift variable on Equation *E_d_diseq*.	X
d_f_eeqror		Economy-wide shift variable on capital supply functions.	X
$d\_f\_eeqror\_j_j$	j∈IND	Industry-specific shift variables on capital supply functions.	X
$d\_f\_eeqror\_jr_{j,r}$	j∈IND r∈REG	Regional industry-specific shift variables on capital supply functions.	N
$d\_f\_eeqror\_r_r$	r∈REG	Region-specific shift variables on capital supply functions.	X
$d\_gamma_{i,r}$	i∈COM r∈REG	Change in the subsistence consumption of commodity *i* expressed as a percentage of the consumption of *i*.	N
d_inf		Change in the rate of inflation.	N
d_int		Change in nominal rate of interest.	N
d_rint		Change in the real interest rate.	X
$d\_rint\_pt\_se_{j,r}$	j∈IND r∈REG	Change in the real post-tax static-expectations discount rate factor for regional industry *j,r*.	N
debtF_tl		Foreign currency value of Commonwealth Government net debt at *t*+1.	N
debt_gdp_tl		Commonwealth debt to GDP ratio - end of simulation year.	N
$debt\_gsp\_tl_r$	r∈REG	Ratio of regional government *r*'s debt to GSP at time *t*+1.	N
$debtr\_tl_r$	r∈REG	Foreign currency value of the debt of regional government *r* at *t*+1.	N
del_b		Change in the domestic currency balance of trade.	N
$del\_basepop_r$	r∈REG	Change in the base population of region *r* arising from natural population growth.	N
del_bt_gdp		Change in the balance of trade / GDP ratio.	N
del_cpi_l		Homotopy variable on Equation *E_cpi_l*. Calculates the percentage change in the lagged CPI from database values.	X
del_debtf		Change in Federal government debt.	N
del_debtr_r	r∈REG	Change in the foreign currency value of regional government *r*'s debt at *t*.	N
$del\_f\_a1_{j,r}$	j∈IND r∈REG	Shift variable on Equation *E_del_f_a1*. Allows for the cost impact of commodity using technical change on User 1 to be neutralised *via* all-input using technical change.	N

$del\_f\_a2_{j,r}$	j∈IND r∈REG	Shift variable on Equation *E_del_f_a2*. Allows for the cost impact of commodity using technical change on User 2 to be neutralised *via* all-input using technical change.	N
$del\_f\_ac\_p\_y_{j,r}$	j∈IND r∈REG	Shift variable on year-to-year capital accumulation equation.	N
del_f_wage_c		Shift variable on labour market adjustment mechanism, Equation *E_del_f_wage_c*	N
$del\_k\_gr_{j,r}$	j∈IND r∈REG	Change in the capital growth rate across the forecast year.	N
$del\_nagrowth_r$	r∈REG	Change in the natural growth rate.	X
del_netf_r	r∈REG	Change in the foreign currency value of household *r*'s net foreign assets.	N
del_own_H		(change) Homotopy variable on Equation *E_k_owners*.	X
$del\_ror\_se_{j,r}$	j∈IND r∈REG	Change in the static expectations rate of return on regional industry *j,r*'s capital stock.	N
$del\_tax\_1ph_{i,s,j,r}$	i∈COM s∈REG j∈IND r∈REG	Change in the phantom tax collections on inputs to current production.	N
$del\_tax\_1ph_{i,s,j,r}$	i∈COM s∈REG j∈IND r∈REG	Change in the phantom tax collections on inputs to current production	N
$del\_tax\_2ph_{i,s,j,r}$	i∈COM s∈REG j∈IND r∈REG	Change in the phantom tax collections on inputs to capital creation	N
$del\_tax\_3ph_{i,s,r}$	i∈COM s∈REG r∈REG	Change in the phantom tax collections on purchases by households.	N
$del\_tax\_4ph_{i,,r}$	i∈COM r∈REG	Change in phantom tax collections on exports.	N
$del\_tax\_5ph_{i,s,r}$	i∈COM s∈REG r∈REG	Change in the phantom tax collections on purchases by regional governments.	N
$del\_tax\_6ph_{i,s}$	i∈COM s∈REG	Change in the phantom tax collections on purchases by the Commonwealth Government.	N
del_unity		Homotopy variable - Commonwealth net debt..	X
del_unity_m1		Homotopy variable - natural population growth	X
del_unity_m2		Homotopy variable - movement of migrant numbers to equilibrium.	X

del_unityl		Homotopy variable - labour market adjustment mechanism. Shocked equal to 1 in deviation / policy run.	X
del_unityr_r	r∈REG	Homotopy variable - capital accumulation and asset prices.	X
$del\_unityr2_r$	r∈REG	Homotopy variable - closure of difference between expected and equilibrium rates of return.	X
$del\_unityr3_r$	r∈REG	Homotopy variable on regional government *r*'s debt accumulation.	X
del_unityr4		Calculates $ch\_kgr1_{j,r}$ and $ch\_kgr2_{j,r}$ from corresponding coefficient values.	X
del_unityrf	r∈REG	Homotopy variable on household net foreign debt accumulation equation.	X
del_X_r	r∈REG	When shocked equal to 1 establishes "X" component of CPI minus X pricing for utility output	X
$deltapc_{i,r}$	i∈COM r∈REG	Change in household tastes - luxury part.	N
$dinc\_dtax_r$	r∈REG	Decomposition contribution of direct taxes to percentage change in disposable income.	N
$dinc\_ginc_r$	r∈REG	Decomposition: contribution of gross income to percentage change in disposable income.	N
$dtax_r$		Net direct taxes paid by, and transfer payments to, the residents of region *r*.	N
$dtax\_b34r_r$	r∈REG	Decomposition: Contribution of changes in regional government income reducing taxes to percentage change in net direct taxes.	N
$dtax\_b38r_r$	r∈REG	Decomposition: Contribution of changes in other regional government receipts to percentage change in net direct taxes.	N
$dtax\_b47_r$	r∈REG	Decomposition: Contribution of changes in other Commonwealth receipts to percentage change in net direct taxes.	N
$dtax\_kaptax_r$	r∈REG	Decomposition : contribution of changes in capital taxes to percentage change in net direct taxes.	N
$dtax\_paye_r$	r∈REG	Decomposition: contribution of changes in PAYE taxes to percentage change in net direct taxes.	N
$dtax\_t51_r$	r∈REG	Decomposition: contribution of state government transfers to persons to percentage change in net direct taxes.	N
$dtax\_t62_r$	r∈REG	Decomposition: contribution of changes in transfers other than interest and benefits to percentage change in net direct taxes.	N
$dtax\_unb_r$	r∈REG	Decomposition: Contribution of changes in receipts of unemployment benefit payments to percentage change in net direct taxes.	N

$dzact1_{i,s,r}$	i∈COM s∈REG r∈REG	Decomposition of output - contribution to output change of good *i* from *s* of intermediate sales to firms in region *r*.	N
$dzact2_{i,s,r}$	i∈COM s∈REG r∈REG	Decomposition of output - contribution to output change of good *i* from *s* of sales to capital creators in region *r*.	N
$dzact3_{i,s,r}$	i∈COM s∈REG r∈REG	Decomposition of output - contribution to output change of good *i* from *s* of sales to households in region *r*.	N
$dzact4_{i,s}$	i∈COM s∈REG	Decomposition of output - contribution to output change of good *i* from *s* of export sales.	N
$dzact5_{i,s,r}$	i∈COM s∈REG r∈REG	Decomposition of output - contribution to output change of good *i* from *s* of sales to regional government *r*.	N
$dzact6_{i,s}$	i∈COM s∈REG	Decomposition of output - contribution to output change of good *i* from *s* of sales to Commonwealth Government.	N
$dzact7_{i,s}$	i∈COM s∈REG	Decomposition of output - contribution to output change of good *i* from *s* of sales for use as margins.	N
$dzact1\_12_{s,k,r}$	s∈IND12 k∈REG r∈REG	Decomposition of sectoral outputs: sales to users of intermediate inputs.	N
$dzact2\_12_{s,k,r}$	s∈IND12 k∈REG r∈REG	Decomposition of sectoral outputs: sales to capital creators.	N
$dzact3\_12_{s,k,r}$	s∈IND12 k∈REG r∈REG	Decomposition of sectoral outputs: sales to households.	N
$dzact4\_12_{s,k}$	s∈IND12 k∈REG	Decomposition of sectoral outputs: sales to exporters.	N
$dzact5\_12_{s,k,r}$	s∈IND12 k∈REG r∈REG	Decomposition of sectoral outputs: sales to regional governments.	N
$dzact6\_12_{s,k}$	s∈IND12 k∈REG	Decomposition of sectoral outputs: sales to Commonwealth Government.	N
$dzact7\_12_{s,k}$	s∈IND12 k∈REG	Decomposition of sectoral outputs: sales for margin usage.	N
e		Foreign currency value of national exports.	N
$emp\_s_{s,r}$	s∈IND22 r∈REG	Employment for 22 regional employment sectors.	N

$empjr_{j,r}$	j∈ IND r∈ REG	Employment in regional industry *j,r*.	N
emp_w_wgts_o		Value of *l_emp* (aggregate employment) in the base forecast / historical run. Determined exogenously in the deviation / policy run	X
ex_hhnfi	r∈REG	Exogenous component of household net foreign income. Foreign currency value.	X
exp_shiftr_r	r∈REG	Uniform regional government shift variable on all outlays.	X
f_a_fac		All factor, all industry, all region primary factor technical change shift variable.	X
$f\_a\_facj_j$	j∈IND	Industry-specific primary factor technical change shift variable operating across all factors and all regions.	X
$f\_a\_facjr_{j,r}$	j∈IND r∈REG	All factor technological change shift variable for regional industry *j,r*.	X
$f\_a\_facr_r$	r∈REG	All factor, all industry, primary factor technical change variable operating on region *r*.	X
$f\_a\_facvj_{v,j}$	v∈FAC j∈IND	Factor and industry specific primary factor technical change variable operating economy-wide.	X
$f\_a\_facvjr_{v,j,r}$	v∈FAC j∈IND r∈REG	Factor, industry, and region -specific primary factor technical change shift variable.	X
$f\_a\_facvr_{v,r}$	v∈FAC r∈REG	Factor-specific primary factor technical change variable operating on region *r*.	X
$f\_a\_mat\_i_i$	i∈COM	Economy-wide shift variable on technical change in intermediate input usage of input *i* (regardless of source).	X
$f\_a\_mat\_ijr_{i,j,r}$	i∈COM j∈IND r∈REG	Shift variable on technical change in intermediate input usage of input *i* (regardless of source) by regional industry *j,r*.	X
$f\_a\_mat\_ir_{i,r}$	i∈COM r∈REG	Region *r* specific shift variable on technical change in intermediate input usage of *i* (regardless of source) across all industries.	X
$f\_a\_mat2_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Shift variable on Equation *E_a2isjr*.	X
$f\_a3\_k_k$	k∈COM	Economy-wide shift in commodity *k* augmenting change in household preferences.	X
$f\_a3\_kr_{k,r}$	k∈COM r∈REG	Region-specific shift in commodity *k* augmenting change in household preferences.	X
f_apc_r	r∈REG	Regional average propensity to consume shift variable.	X

f_chmigrants		Shift variable on Equation E_ch_migrant.	X
$f\_delbasepop_r$	r∈REG	Shifter on Equation *E_del_basepop*.	X
f_eq19		Economy-wide shift in the average propensity to consume.	X
$f\_eq24n\_ir_{i,r}$	i∈NTRAD r∈REG	Region-specific non-traditional export commodity demand shift variable.	X
$f\_eq24t\_ir_{i,r}$	i∈TRAD r∈REG	Region-specific traditional export commodity demand shift variable.	X
$f\_Eqn54_{j,r}$	j∈IND r∈REG	Shift variable on Equation *E_f_eqn54*.	X
$f\_exp\_shiftr_r$	r∈REG	Shift variable on uniform regional government shifter on outlays.	N
f_fed_cap		General shift variable on real Commonwealth outlays on capital formation.	X
$f\_fed\_capr_r$	r∈REG	Region-specific shift variable on real Commonwealth outlays on capital formation.	X
f_getr_r	r∈REG	Shift variable determining the real value of other regional government receipts.	X
f_govcon_gen		All-government consumption shifter.	X
f_inv_cap_u		Economy-wide shift variable on investment/capital ratios.	X
$f\_inv\_capr_r$	r∈REG	Region-specific shift variable on investment/capital ratios.	X
f_kaptax_j	j∈IND	Shift term on the Commonwealth income tax rate on earnings from capital.	X
f_landtx_j	j∈IND	Shift term on the Commonwealth income tax rate on earnings from land.	X
$f\_lr\_emp_r$	r∈ REG	Allows sum of regional industry employments to diverge from sum of regional employment-sector employments.	X
f_ngst		Shift variable operating on all Commonwealth taxes other than household consumption taxes.	X
$f\_ntrad_{i,r}$	i∈NTRAD r∈REG	Shift variable on Equation *E_xr_expn2*: allows movement between the two treatments of NTRAD.	N
f_o_it		Shift variable on "other income" taxes: *p_kaptax* and *p_landtx*.	X
f_oxcost_t	t∈OWNERS	Shift in ownership of working capital - typically exogenous for all but RoW.	t=1: N t=2-5: X
f_p3gen		Gen price shift on national accounts consumption commodities.	X
f_p3r_r	r∈ REG	Regional gen price shift on national accounts consumption commodities.	X

f_pbp		Shift in the real value of both unemployment benefit payments, and other benefit payments, per person.	X
$f\_pop\_15_r$	r∈REG	Shift variable on equations E_popA1 and E_popA2.	X
f_pmp		Commodity-wide shift in the c.i.f foreign currency price of imports.	X
$f\_pmp\_i_i$	i∈COM	Commodity-specific shift in the c.i.f foreign currency price of imports.	X
$f\_r\_rcpts_r$	r∈REG	Shift on regional government *r*'s foreign residual receipts	X
$f\_sg\_invest_r$	r∈REG	General shift variable on regional government *r*'s investment spending.	X
f_t3		General shift variable on tariff rates.	X
$f\_tax\_shiftr_r$	r∈REG	Shift variable on uniform regional government shifter on taxes.	N
f_tff		General shift variable on Commonwealth Government "taxes, fees, and fines".	X
f_transr_r	r∈REG	Shift variable on real per-person transfers by regional government *r*.	X
f_twistlk		Economy-wide labour-capital twist shift variable.	X
f_x_cg		Uniform shift variable on Commonwealth Government consumption expenditure.	X
$f\_x\_sg_r$	r∈REG	Uniform shift variable in regional government *r*'s real current consumption purchases.	X
f_x3r_r	r∈REG	Shifter on national accounts consumption commodities	X
$f\_xfordem_{i,r}$	i∈EXOG r∈REG	Shift variable on the quantity of exogenous export commodities.	X
$f\_xr\_cg_s$	s∈SOU	Uniform shift variable (across commodities) on Commonwealth Government consumption expenditure by source.	X
$f\_y\_cgk_{j,r}$	j∈IND r∈REG	Shift variable on Commonwealth capital formation in regional industry *j*,*r*.	X
$f\_y\_sgk_{j,r}$	j∈IND r∈REG	Shift variable on regional government *r*'s capital formation in regional industry *j*,*r*.	X
f_ytax_r	r∈REG	Shift term on the average rate of regional government *r*'s income reducing taxes.	X
f47		Shift variable on real value of other Commonwealth Government receipts.	N
$f64r_r$	r∈REG	Shift in the real value of Commonwealth Government transfers to the regional governments.	X

$f65$		Region-wide shift in the real value of Commonwealth transfers (other than unemployment benefit payments) to persons	X
$f65r_r$	r∈REG	Shift in the real value of Commonwealth transfers (other than unemployment benefit payments) to persons in region *r*.	X
$fa1mar_{u,r,i,s,j,t}$	u∈MAR r∈REG i∈COM s∈SOU j∈IND t∈REG	Shift on technical change on margin usage - current production	X
$fa2mar_{u,r,i,s,j,t}$	u∈MAR r∈REG i∈COM s∈SOU j∈IND t∈REG	Shift on technical change on margin usage - capital formation	X
$fa3mar_{u,t,i,s,r}$	u∈MAR t∈REG i∈COM s∈SOU r∈REG	Shift on technical change on margin usage - household purchases	X
$fa4mar_{u,t,i,r}$	u∈MAR t∈REG i∈COM r∈REG	Shift on technical change on margin usage – exports	X
$fa5mar_{u,t,i,s,r}$	u∈MAR t∈REG i∈COM s∈SOU r∈REG	Shift on technical change on margin usage - State government purchases	X
$fa6mar_{u,t,i,s}$	u∈MAR t∈REG i∈COM s∈SOU	Shift on technical change on margin usage - Commonwealth purchases	X
fai_i	i∈COM	Shift on Equation *E_fai*.	N
$fcom\_tax_{j,r}$	j∈IND r∈REG	Shift variable on the average rate of commercial land tax paid in regional industry *j,r*.	X
$fcom\_taxr_r$	r∈REG	Region-specific shift variable on commercial land tax rates across industries.	X
fcomm_gen_rev		General Commonwealth Government revenue shift variable.	X
$fd\_f\_eeqror\_jr_{j,r}$	j∈ IND r∈ REG	Shift on Equation *E_fd_f_eeqror_jr*	N
$fd\_f\_eeqror\_j_j$	j∈ IND	Shift on Equation *E_fd_f_eeqror_j*	N

$femp\_s_{s,r}$	s∈ IND22 r∈ REG	Employment shift variable for 22 employment sectors.	X
$fempjr_{j,r}$	j∈ IND r∈ REG	Switch variable on Equation *E_fempjr*.	N
feq_general		Commodity and region - wide export demand shift variable.	X
$feq\_generalr_r$	r∈REG	Region-specific general export demand shift variable.	N
$ff\_twistlk_{j,r}$	j∈IND r∈REG	Regional-industry specific labour / capital twist shift variable.	X
$ffafac_{j,r}$	j∈IND r∈REG	Shift on Equation *E_ffafac*.	N
$ffp3r_{i,s,r}$	i∈COM s∈REG r∈REG	Shift on Equation *E_ffp3r*.	N
$ffpayer_r$	r∈REG	Region-specific shift in PAYE tax rates.	X
$ffpayer_r$	r∈REG	Region-specific shift in PAYE tax rates.	X
$ffeq\_generalr_r$	r∈REG	Switch shift variable on $feq\_generalr_r$	X
ffprod		Economy-wide shift variable on the real value of Commonwealth net production tax payments.	X
fgen_ppr		Economy-wide shift variable on regional participation rates.	X
$fi\_tc\_hous_i$	i∈COM	Commodity-specific consumption tax shifter	X
$fi\_tc0\_ind_i$	i∈COM	Commodity specific shifter on Commonwealth indirect taxes on capital formation and current production.	X
$fi\_twist\_isbot_i$	i∈COM	Switch variable on Equation *E_fi_twist_isbot*.	N
finv_com		Ratio of real private investment budget to real household consumption budget.	X
$fir\_\_tc\_hous_{i,r}$	i∈COM r∈REG	Commodity and region specific consumption tax shifter	X
$fj\_tc0\_ind_j$	j∈IND	Industry specific shifter on Commonwealth indirect taxes on capital formation and current production.	X
$fk\_tc0\_ind_k$	k∈PUR	Purpose-specific Commonwealth indirect tax shift variable.	X
fni_shift_r	r∈REG	Shift to foreign net residual income of regional government *r*.	X
$fp\_utility_{i,s}$	i∈UTILITY s∈REG	Shift variable on Equation *E_fp_utility*	N
$fp3ncom_{na,r}$	na∈nCOM r∈REG	Price shifter, national accounts commodities .	X

$fp3r_{i,r}$	i∈COM r∈REG	Shift on Equation *E_ffp3r*.	X
fpaye		Average PAYE tax rate.	N
fpentrad		Shift variable on export prices of non-traditional exports.	X
$fphtax2_r$	r∈REG	Region - specific shift on phantoms on k inputs.	X
$fphtax2isr_{i,s,r}$	i∈COM s∈REG r∈REG	Commodity and source-specific shift on phantom taxes on inputs to capital formation in region *r*	X
$fphtax3r_r$	r∈REG	Region specific shift on phantom taxes on household purchases	X
$fphtax3_{i,s,r}$	i∈COM s∈REG r∈REG	Phantom tax shifter for setting consumer prices exogenous.	X
$fphtax5_r$	r∈REG	Region - specific shift on phantoms on reg. gov inputs.	X
$fphtax5isr_{i,s,r}$	i∈COM s∈REG r∈REG	Commodity and source specific shift on phantom taxes on purchases by regional governments for current consumption	X
$fphtax6_r$	r∈REG	Region - specific shift on phantoms on CW gov. inputs.	X
$fphtax6is_{i,r}$	i∈COM r∈REG	Commodity - specific shift on phantom taxes on purchases by the Commonwealth Government for current consumption	X
$fpostqj_{q,j}$	q∈OCC j∈IND	Nation-wide shift variable on the pre-tax wage in occupation *q* employed in industry *j*.	X
fpre		Economy-wide shift variable on the pre-tax wage.	X
$fprej_j$	j∈IND	Nation-wide shift variable on the pre-tax wage in industry *j*.	X
$fprejr_{j,r}$	j∈IND r∈REG	Occupation-wide shift variable on the pre-tax wage in regional industry *j*,*r*.	X
$fpreq_q$	q∈OCC	Economy-wide shift variable on the pre-tax wage in occupation *q*.	X
$fpreqir_{q,j,r}$	q∈OCC j∈IND r∈REG	Shift variable on the pre-tax wage paid to labour of skill type *q* employed in regional industry *j*,*r*.	X
$fpreqj_{q,j}$	q∈OCC j∈IND	Shift variable on the pre-tax wage paid to labour of skill type *q* employed in industry *j*.	X
$fpreqr_{q,r}$	q∈OCC r∈REG	Shift variable on the pre-tax wage paid to labour of skill type *q* employed in region *r*, regardless of industry.	X

$fprer_r$	r∈REG	Shift variable on the pre-tax wage paid to labour in region *r*, irrespective of occupation or industry.	X
$fprodj_j$	j∈IND	Shift variable on real Commonwealth Government net production tax payments.	N
$fprodr_r$	r∈REG	Uniform shift variable on regional government *r*'s net production tax rates.	X
$fprodrj_{j,r}$	j∈IND r∈REG	Industry-specific shift variable on regional government *r*'s net production tax rates.	X
fr_ppr_r	r∈REG	Region specific shift variable on regional participation rates.	X
fr_sginv_r	r∈REG	Shift variable on Equation *E_fr_sginv* allowing for indexing of real regional investment expenditure.	N
$fr\_twistlk_r$	r∈REG	Region-specific labour/capital twist shift variable.	X
$fres\_out_r$	r∈REG	Shift on foreign currency value of residual regional government outlays.	X
$fres\_tax_r$	r∈REG	Shift variable on the average residential land tax rate in region *r*.	X
$frollh_{j,r}$	j∈IND r∈REG	Shift in the payroll tax rate payable by regional industry *j,r*.	X
$frollm_{q,r}$	q∈OCC r∈REG	Shift in the payroll tax rate effective on skill type *q* in region *r*.	X
$frollmh_{q,j,r}$	q∈OCC j∈IND r∈REG	Shift in the payroll tax rate effective on skill type *q* employed in regional industry *j,r*.	X
$frollr_r$	r∈REG	General shift variable on the payroll tax rate in region *r*.	X
$fsk\_owners_{t,j,r}$	t∈OWNERS j∈IND r∈REG	Shift on Equation *E_fsk_owners* to turn off Option Two treatment.	N
fswitch_f47		Shift variable to switch between general & specific determination of other real Commonwealth Government receipts.	X
$fswitch\_hous_{i,s}$	i∈COM s∈SOU	Shift variable to switch between general & specific determination of Commonwealth commodity taxes on household purchases.	X
fswitch_paye		Shift variable to switch between general & specific determination of PAYE rate.	X
$fswitch\_prodj_j$	j∈IND	Shift variable to switch between general & specific determination of Commonwealth net production tax rates.	X
$fswitch\_t3_i$	i∈COM	Shift variable to switch between general & specific determination of import duties.	X

$fswitch\_t4_{i,r}$	i∈COM r∈REG	Shift variable to switch between general & specific determination of export taxes.	X
$fswitch\_tind_i$	i∈COM	Shift variable to switch between general & specific determination of Commonwealth ad-valorem tax rates on inputs to current production and capital formation.	X
$ft4$		General export tax rate shift variable.	X
$fts\_hous_{i,s,r}$	i∈COM s∈SOU r∈REG	Shift variable on regional government *r*'s ad-valorem commodity tax rate on purchases by households.	X
$ft61_r$	r∈REG	Shift variable for switching between *E_ft61* and *E_t61* treatments for *t61*.	N
$fts0\_ind_{i,s,r,k}$	i∈COM s∈SOU r∈REG k∈PUR	Shift variable on regional government *r*'s ad-valorem commodity tax rate on inputs to capital formation and current production.	X
$ftwist\_is1_{i,j,r}$	i∈COM j∈IND r∈REG	Shift variable on inter-regional sourcing twist (user 1).	X
$ftwist\_is2_{i,j,r}$	i∈COM j∈IND r∈REG	Shift variable on inter-regional sourcing twist (user 2).	X
$ftwist\_is3_{i,r}$	i∈COM r∈REG	Shift variable on inter-regional sourcing twist (user 3).	X
$ftwist\_isbot$		General intra-regional sourcing twist term.	X
$ftwist\_src_i$	i∈COM	Economy-wide commodity-specific twist shift variable.	X
$ftwist\_srcr_{i,r}$	i∈COM r∈REG	Commodity and region specific import twist shift variable.	X
fun_b		Shift in the real value of Commonwealth Government unemployment benefit payments per person.	X
fx_s_s	s∈XCOMO	Output shifter for 22 national output sectors.	X
$fx\_sr_{s,r}$	s∈XCOMO r∈REG	Output shifter for 22 regional output sectors.	X
fx_total_i	i∈COM	Switch variable on Equation *E_fx_total*.	N
$fx\_tot_{i,r}$	i∈COM r∈REG	Switch variable on Equation *E_fx_tot*.	N
$fx5reg_r$	r∈REG	Shift variable on Equation *E_fx5reg*, allowing for indexing of real regional government consumption spending.	N
$fxsr_r$	r∈REG	Allows sum of regional sectoral outputs and sum of regional commodity outputs to diverge.	X

fy_nat_j	j∈IND	Switch variable on Equation *E_fy_nat*	N
$fy\_p56_{j,r}$	j∈IND r∈REG	Switch variable on the Equation *E_fy_p56*	N
fy_s	s∈XIND	Exogenous investment shifter for national industry sectors in set XIND	X
$fy\_sr_{s,r}$	s∈XIND r∈REG	Exogenous investment shifter for regional industry sectors in XIND	X
$g\_cint_{i,s,j,r,k}$	i∈COM s∈SOU j∈IND k∈PUR r∈REG	Commonwealth Government commodity taxes paid per unit input to current production and capital creation.	N
$g\_ctax_{i,s,r}$	i∈COM s∈SOU r∈REG	Commonwealth Government commodity taxes per unit of household purchases.	N
$g\_extax_{i,r}$	i∈COM r∈REG	Commonwealth Government net export taxes per unit of exports.	N
$g\_sint_{i,s,j,r,k}$	i∈COM s∈SOU j∈IND r∈REG k∈PUR	Regional government commodity taxes paid per unit input to current production and capital creation.	N
$g\_stax_{i,s,r}$	i∈COM s∈SOU r∈REG	Regional government commodity taxes per unit of household purchases.	N
g_tar_i	i∈COM	Commonwealth Government tariff per unit of imported commodity *i*.	N
gdp_def		GDP deflator.	N
gen_p3		General shifter on household commodity taxes	X
gen_pants		General shifter on commodity taxes	X
$ginc\_fint_f$	f∈REG	Decomposition: contribution of net foreign interest payments to percentage change in gross income.	N
$ginc\_ocost_f$	f∈REG	Decomposition: contribution of change in other costs to percentage change in gross income.	N
$ginc\_phant_f$	f∈REG	Decomposition contribution of phantom tax income to percentage change in gross income.	N
$ginc\_rent_f$	f∈REG	Decomposition: contribution of change in rental income to percentage change in gross income.	N
$ginc\_wage_f$	f∈REG	Decomposition: contribution of change in wage income to percentage change in gross income.	N

$ginc\_xnfi_f$	f∈REG	Decomposition: contribution of exogenous net foreign income to percentage change in household gross income.	N
grp_sh_r	r∈REG	Regional share in national GDP	N
gsp_def_r	r∈REG	Region *r*'s gross regional product deflator.	N
i_aust		Economy-wide nominal investment budget.	N
i_aust_r		Economy-wide real investment budget.	N
i_priv_r	r∈REG	Regional nominal private investment budget.	N
i_real		Economy-wide real private investment budget.	N
i_rr_r	r∈REG	Regional real private investment budget.	N
i_wide		Economy-wide private (endogenous) investment budget.	N
imports		Foreign currency value of national imports.	N
int_indtax		General shift on Commonwealth indirect taxes on intermediate and capital inputs.	X
ipi		National private investment price index.	N
ipi_r_r	r∈REG	Regional private investment price index.	N
is_surplus	r∈REG	Change in region r's nominal interstate balance of trade surplus.	N
itrev		Economy-wide collections of indirect tax revenue.	N
$itrev\_r_r$	r∈REG	Indirect tax revenue by region.	N
k_rst_r	r∈REG	Regional capital stock, rental weights.	N
$k\_rst\_a_r$	r∈REG	Regional capital stocks, asset value weights.	N
kst		Economy-wide capital stock, rental weights.	N
kst_a		National capital stocks, asset value weights.	N
l_emp		National employment.	N
lr_emp_r	r∈REG	Regional employment	N
lr_force_r	r∈REG	Regional labour force	N
$lrm\_emp_{q,r}$	q∈OCC r∈REG	Aggregate employment of skill type *m* in region *r*.	N
$n2reg_r$	r∈REG	Nominal regional gross fixed capital formation, aggregate commodity inputs side.	N
$n3reg_r$	r∈REG	Nominal regional consumption, aggregate commodity consumption side.	N
$n4reg_r$	r∈REG	Nominal Australian dollar value of exports from region *r*.	N

$n5reg_r$	r∈REG	Nominal regional government consumption in region *r*.	N
$n6reg_r$	r∈REG	Nominal Commonwealth consumption expenditure allocated to region *r*.	N
nMnat		National Australian dollar value of imports.	N
$nMreg_r$	r∈REG	Nominal Australian dollar value of imports into region *r*.	N
n2nat		Nominal national gross fixed capital formation.	N
n3nat		Nominal national household consumption expenditure.	N
n4nat		Nominal national exports.	N
n5nat		Nominal economy-wide consumption expenditure by regional governments.	N
n6nat		Nominal economy-wide consumption expenditure by the Commonwealth Government.	N
$n\_agland_{j,r}$	j∈IND r∈REG	Demand for agricultural land in regional industry *j*,*r*.	N
n_dinc_r	r∈REG	Nominal disposable income of the residents of region *r*.	N
n_gdpe		Nominal GDP, expenditure side.	N
n_gdpfc1		Nominal GDP at factor cost: GDP at market prices less indirect taxes.	N
n_gdpfc2		Nominal GDP at factor cost: Income approach.	N
n_gdpfc3		Nominal GDP at factor cost: Production approach.	N
n_gdpi		Nominal GDP, income approach.	N
n_ginc_r	r∈REG	Nominal gross income of the residents of region *r*.	N
n_grpe_r	r∈REG	Nominal gross regional product of region *r*, expenditure side.	N
n_grpfc1_r	r∈REG	Nominal gross regional product of region *r* at factor cost: GRP(E) less indirect taxes.	N
n_grpfc2_r	r∈REG	Nominal gross regional product of region *r* at factor cost: income approach.	N
n_grpfc3_r	r∈REG	Nominal gross regional product at factor cost estimate: production approach.	N
n_grpi_r	r∈REG	Nominal gross regional product of region *r*, income side.	N
n_ism_r	r∈REG	Nominal value of inter-state imports into region *r*.	N
n_isx_r	r∈REG	Nominal value of inter-state exports from region *r*.	N
n_sav_r	r∈REG	Nominal household savings	N

n_shift_r	r∈REG	Shift variable common (although oppositely signed) to both regional government own-source revenue and outlays.	X
nat_unemp		Number of unemployed persons, economy-wide.	N
$net\_f\_int_r$	r∈REG	Net foreign interest receipts by household *r*, foreign currency value.	N
$net\_f\_int\_dc_r$	r∈REG	Foreign interest payments by household *r* - $A	N
net_os_f		Net interest payments by the Commonwealth Government, foreign currency value.	N
$net\_os\_r_r$	r∈REG	Net foreign interest payments (foreign currency value) by regional government *r*.	N
omega		Economy-wide expected rate of return on capital – comparative static (FEDERAL) model definition.	N
$on\_agland_{t,j,r}$	t∈OWNERS j∈IND r∈REG	Ownership of agricultural land by owner type *t* in regional industry *j*,*r*.	X
os_int_f		Average interest rate on net foreign debt of the Commonwealth Government.	X
os_int		Average interest rate on household net foreign debt	X
$os\_int\_r_r$	r∈REG	Exogenous average interest rate on net foreign debt - regional government *r*	X
os_surplus	r∈REG	Change in region *r*'s nominal overseas balance of trade surplus.	N
$oxcost_t$	t∈OWNERS	Ownership of working capital by owner type *t*.	N
p_ants_i	i∈COM	ANTS-equivalent prices.	N
$p\_basic_{i,s}$	i∈COM s∈SOU	Basic price of good *i* from source *s*	N
$p\_cgov_{i,s}$	i∈COM s∈SOU	Price faced by the Commonwealth Government for good *i* from source *s* for input to current consumption expenditure.	N
p_exp_i	i∈COM	f.o.b. foreign currency export price of commodity *i*	N
$p\_exp\_ueb_r$	r∈REG	Expected nominal per-person unemployment benefit in region *r*.	N
$p\_exp\_wage_r$	r∈REG	Expected per-person nominal wage in region *r*.	N
p_gne		Price index for gross national expenditure.	N
p_grpfc2_r	r∈REG	Regional price index for gross regional product at factor cost.	N
$p\_housphant_r$	r∈REG	Phantom tax revenue accruing to household *r*.	N
p_ism_r		Price index of region *r*'s inter-regional imports.	N

p_isx_r	r∈REG	Price index of region r's inter-regional exports.	N
$p\_k\_grossrent_k$	k∈REG	Gross capital rentals accruing to household type *k*.	N
$p\_k\_kaptax_k$	k∈REG	Capital taxes paid by household type *k*.	N
$p\_kaptax_{j,r}$	j∈IND r∈REG	Commonwealth income tax paid per unit of capital employed in regional industry *j,r*.	N
$p\_land_{j,r}$	j∈AGG r∈REG	After tax receipts on land rental.	N
$p\_landtx_{j,r}$	j∈AGG r∈REG	Commonwealth taxes on returns to land per unit of land.	N
$p\_net\_fiscal_r$	r∈REG	Expected per person nominal net fiscal benefits in region *r*.	N
$p\_pp\_rate_r$	r∈REG	Percent change in the regional participation rate	N
$p\_r\_grossrent_r$	r∈REG	Gross capital rentals accruing to the residents of region *r*.	N
$p\_r\_kaptax_r$	r∈REG	Capital and land taxes paid by the residents of region *r*.	N
$p\_rexp_{i,r}$	i∈COM r∈REG	f.o.b. foreign currency export price of commodity *i* from region *r*	N
$p\_rexp\_exog_{i,r}$	i∈NTRAD r∈REG	Shift variable on Equation *E_p_rexp_exog*.	N
$p\_rexp\_imp_{i,r}$	i∈IMP r∈REG	Shift variable on Equation *E_p_rexp_imp*.	N
$p\_roll_{q,j,r}$	q∈OCC j∈IND r∈REG	Payroll tax payable per unit of labour type *q* employed by regional industry *j,r*.	N
$p\_sgov_{i,s,r}$	i∈COM s∈SOU r∈REG	Price of good *i* from source *s* used by Regional government *r* for current consumption.	N
p_tg		Price of traded goods.	N
$p\_ue\_rate_r$	r∈REG	Percentage change in the regional unemployment rate.	N
$p3\_ff\_na_{i,na,r}$	i∈COM na∈COM r∈REG	Price of cross-classified FEDERAL-F/national accounts commodities.	N
$p3\_na\_i_{i,r}$	i∈COM r∈REG	Price of FEDF commodities related to price of FEDERAL-F/national accounts commodities.	N
$p1_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Price paid by regional industry *j,r* for good *i* from source *s* for input to current production.	N
$p1cap_{j,r}$	j∈IND r∈REG	Post-tax rental price of capital in regional industry *jr*	N

$p2_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Price paid by regional industry *jr* for good *i* from source *s* for use in capital formation	N
$p3_{i,r}$	i∈COM r∈REG	Price of composite commodity *i* to household *r*.	N
p2nat		Economy-wide investment price index	N
p3nat		Economy-wide consumer price index	N
$p3ncom_{na,r}$	na∈NCOM r∈REG	Price of consumption composite, national account level.	N
$p3shift_{i,r}$	i∈COM r∈REG	Consumption price shifter for FEDF commodities.	N
p4nat		National export price index - domestic currency prices.	N
p6nat		National Commonwealth Government consumption price index.	N
$p3r_{i,s,r}$	i∈COM s∈SOU r∈REG	Price faced by household *r* for commodity *i* from source *s*.	N
$p2reg_r$	r∈REG	Regional investment price index.	N
$p3reg_r$	r∈REG	Regional consumer price index.	N
$p4reg_r$	r∈REG	$A regional export price index.	N
$p5reg_r$	r∈REG	Regional government consumption price index.	N
$p6reg_r$	r∈REG	Regional Commonwealth Government consumption price index.	N
$paye_{q,j,r}$	q∈OCC j∈IND r∈REG	PAYE tax per labour unit.	N
pbp_nom		Commonwealth Government nominal outlays on personal benefits.	N
pbp_real		Real value of Commonwealth Government outlays on personal benefits.	N
$pcapatt_{j,r}$	j∈IND r∈REG	Asset price of capital by regional industry, start of year	N
$pcapatt1_{j,r}$	j∈IND r∈REG	Asset price of capital by regional industry, end of year	N
$pcom\_tax_{j,r}$	j∈IND r∈REG	Regional government commercial land tax paid per unit of capital installed in regional industry *j,r*.	N

pcost		Economy-wide per-unit price of "other cost" tickets.	N
phant_cgov		Percentage change in phantom tax collections by the Commonwealth Government.	N
$phant\_rgov_r$	r∈REG	Percentage change in phantom tax collections by regional government *r*.	N
phant3nat		Economy-wide phantoms on household purchases.	N
$phantotal_{i,s}$	i∈COM s∈REG	Total phantom taxes collected on commodity *i* from region *s*.	N
$phantotal2_{i,r}$	i∈COM r∈REG	Total phantom taxes accruing *within* region *r*.	N
$pi_{j,r}$	j∈IND r∈REG	Costs of units of capital installed in regional industry *j,r* during the simulation year.	N
$plab_{q,j,r}$	q∈OCC j∈IND r∈REG	Price faced by regional industry *j,r* for labour of skill type *q*.	N
pMdom		Index of domestic price of imported goods, using import weights.	N
pMnat		National domestic currency c.i.f import price index.	N
pmp_i	i∈COM	c.i.f. foreign currency import price of commodity *i*.	N
$pMreg_r$	r∈REG	Regional domestic currency c.i.f import price index.	N
pop_15_r	r∈REG	Population aged 15+ in region *r*	N
$postwage_{q,j,r}$	q∈OCC j∈IND r∈REG	Post-tax nominal wage per labour unit.	N
$powtax1ph_{i,s,r}$	i∈COM s∈SOU r∈REG	Power of the phantom tax on inputs to current production.	N
$powtax2ph_{i,s,r}$	i∈COM s∈REG r∈REG	Power of the phantom tax on inputs to capital formation.	N
$powtax3ph_{i,s,r}$	i∈COM s∈REG r∈REG	Power of the phantom tax on inputs to households.	N
$powtax4ph_{i,r}$	i∈COM r∈REG	Power of the phantom tax on exports.	N
$powtax5ph_{i,s,r}$	i∈COM s∈REG r∈REG	Power of the phantom tax on inputs to regional governments.	N

$powtax6ph_{i,s}$	i∈COM s∈REG	Power of the phantom tax on inputs to Commonwealth Government.	N
$pprim_{v,j,r}$	v∈FAC j∈IND r∈REG	Price faced by regional industry *j,r* for primary factor *v*.	N
$pres\_tax_{j,r}$	j∈IND r∈REG	Regional government residential land tax paid per unit of capital installed in ownership of dwellings.	N
$prewage_{q,j,r}$	q∈OCC j∈IND r∈REG	Pre - (PAYE) tax nominal wage per labour unit.	N
punb		Unemployment benefits per unemployed person.	N
$prewage\_nr_r$	r∈REG	Region-wide nominal pre-tax wage.	N
$prewage\_rr_r$	r∈REG	Region-wide real consumer (national CPI deflated) pre-tax wage.	N
$prod\_n\_util_r$	r∈REG	Production tax revenue accruing on output of non-utility industries.	N
$qhous_r$	r∈REG	Number of households in region *r*	N
$qk\_owners_{t,j,r}$	t∈OWNERS j∈IND r∈REG	Percent change in quantity of capital owned by owner *t* in *j,r*.	N
r_cr_rgne		Ratio of real national consumption to real GNE.	N
r_gdpe		Real national GDP - Expenditure approach.	N
r_gdpfc1		Real GDP at factor cost: GDP at market prices less indirect taxes.	N
r_gdpfc2		Real GDP at factor cost: Income approach.	N
r_gdpfc3		Real GDP at factor cost: Production approach.	N
r_gdpi		Real national GDP - Income approach.	N
r_grpe_r	r∈REG	Real gross regional product, expenditure side.	N
r_grpfc1_r	r∈REG	Real gross regional product at factor cost estimate: GRP(1) deflated by price index for GRP(2).	N
r_grpfc2_r	r∈REG	Real gross regional product at factor cost: income approach.	N
r_grpfc3_r	r∈REG	Real gross regional product at factor cost: production approach.	N
r_grpi_r	r∈REG	Real gross regional product of region *r* - Income side.	N
$r\_inv\_cap_{j,r}$	j∈IND r∈REG	Investment/capital ratios by regional industry	N

r_ir_rgne		Ratio of real economy-wide investment to real GNE	N
r_prewage		Real national (consumer) pre-tax wage	N
r_rcpts_r	r∈REG	Foreign currency value: residual regional government receipts.	N
r_sginv_r	r∈REG	Real regional government investment expenditure.	N
$real\_cb1r_r$	r∈REG	Borrowing requirement of regional government *r* measured at regional government consumption prices.	N
real_cb2		Real Commonwealth borrowing requirement deflated at Commonwealth consumption price index.	N
real_gne		Real gross national expenditure.	N
real_wage_c_o		Value of *r_prewage* in the base forecast / historical run. Determined exogenously in the deviation / policy run	X
$rel\_p\_ants_{i,r}$	i∈COM r∈REG	Relative ANTS prices.	N
$rel\_p3r_{i,s,r}$	i∈COM s∈SOU r∈REG	Consumer prices relative to CPI.	N
$rel\_p3\_dwell_r$	r∈REG	Relative ANTS price - dwellings.	N
res_out_r	r∈REG	Foreign currency value: residual regional government outlays.	N
$rgre_r$	r∈REG	Real gross regional expenditure.	N
$rltax_r$	r∈REG	Aggregate residential land tax receipts by regional government *r*.	N
$salestax_r$	r∈REG	Regional government shift variable on rate of sales tax across all users.	X
$sg\_nom\_inv_r$	r∈REG	State government nominal investment spending	N
$sgbedpi_r$	r∈REG	Net returns from capital owned by regional government *r*.	N
$sgptr_r$	r∈REG	Aggregate payroll tax receipts by regional government *r*.	N
$sgrev\_tot_r$	r∈ REG	Total receipts by regional government *r*.	N
$shift\_afac_{s,r}$	s∈IND22 r∈REG	Shift on Equation *E_ffafac*.	X
$shift\_ai_s$	s∈XCOMO	Shift on Equation *E_fai*.	X
$sk\_owners_{t,j,r}$	t∈OWNERS j∈IND r∈REG	Percent change in share of capital owned by owner *t* in *j,r*	X

$spptax_{j,r}$	j∈IND r∈REG	Regional government production tax per regional government production tax unit.	N
sum_p_ants		Weighted economy-wide ANTS prices.	N
$t3_i$	i∈COM	Commonwealth Government import duty on commodity *i*, expressed as an ad valorem tax.	N
$t4_{i,r}$	i∈COM r∈REG	Commonwealth ad valorem net export tax rate.	N
$t51_r$	r∈REG	Regional government transfers to persons.	N
$t61_r$	r∈REG	Commonwealth Government transfers to regional government *r*.	N
$t62_r$	r∈REG	Commonwealth Government transfers to persons, other than interest and unemployment benefits.	N
t64		Exogenous component of net Commonwealth foreign outlays.	X
$tax\_1ph_{i,s}$	i∈COM s∈REG	Phantom tax payable on intermediate inputs.	N
$tax\_2ph_{i,s}$	i∈COM s∈REG	Phantom tax payable on inputs to capital creation.	N
$tax\_3ph_{i,s}$	i∈COM s∈REG	Phantom tax payable on purchases by households.	N
$tax\_4ph_{i,s}$	i∈COM s∈REG	Phantom tax payable per unit of exports.	N
$tax\_5ph_{i,s}$	i∈COM s∈REG	Phantom tax payable per unit of purchases by regional governments for current consumption.	N
$tax\_6ph_{i,s}$	i∈COM s∈REG	Phantom tax payable per unit of Commonwealth Government purchases for current consumption.	N
$tax\_nsph_{i,s}$	i∈COM s∈REG	Non-spreading phantom tax rate on commodity *i* from source *s*.	X
$tax\_nsph\_old_{i,s}$	i∈COM s∈REG	Forecast value of non-spreading phantom tax rates set during deviation simulation.	N
tax_shiftr_r	r∈REG	Uniform regional government shift variable on taxes.	X
$tax\_sph_{i,s}$	i∈COM s∈REG	Spreading phantom tax rate on commodity *i* from source *s*.	X
$tax\_sph\_old_{i,s}$	i∈COM s∈REG	Forecast value of spreading phantom tax rates set during deviation simulation.	N
$tc\_hous_{i,s}$	i∈COM s∈REG	Commonwealth ad-valorem tax rate on household purchases.	N

$tc0\_ind_{i,s,j,r,k}$	i∈COM s∈SOU j∈IND r∈REG k∈PUR	Commonwealth ad-valorem tax rate on inputs of *i* to current production and capital creation.	N
toft		Terms of trade.	N
$total\_phant1_{i,s}$	i∈COM s∈REG	Total phantom tax revenue collected on commodity *i* from region *s* for use in current production.	N
$total\_phant2_{i,s}$	i∈COM s∈REG	Total phantom tax revenue collected on commodity *i* from region *s* for use in capital formation.	N
$total\_phant3_{i,s}$	i∈COM s∈REG	Total phantom tax revenue collected on commodity *i* from region *s* purchased by households for current consumption.	N
$total\_phant4_{i,s}$	i∈COM s∈REG	Total phantom tax revenue collected on commodity *i* exported from region *s*.	N
$total\_phant5_{i,s}$	i∈COM s∈REG	Total phantom tax revenue collected on commodity *i* from region *s* purchased by regional governments for consumption.	N
$total\_phant6_{i,s}$	i∈COM s∈REG	Total phantom tax revenue collected on commodity *i* from region *s* purchased by the Commonwealth Government for current consumption.	N
tp_basic_i	i∈COM	Economy-wide basic price of commodity *i*.	N
transfers		Total Commonwealth transfers (other than unemployment benefits) to persons.	N
$ts\_hous_{i,s,r}$	i∈COM s∈SOU r∈REG	Term allow for ad-valorem treatment of regional government commodity taxes on household purchases.	N
$ts0\_ind_{i,s,r,k}$	i∈COM s∈SOU r∈REG k∈PUR	Term allowing for ad-valorem treatment of regional government commodity taxes on inputs to current production and capital formation.	N
$twist\_is1_{i,j,r}$	i∈COM j∈IND r∈REG	Inter-regional twist term - current production.	N
$twist\_is\_s_s$	s∈XCOM	Inter-regional sourcing twist on output sector.	X
$twist\_is2_{i,j,r}$	i∈COM j∈IND r∈REG	Inter-regional twist term - capital creation.	N
$twist\_is3_{i,r}$	i∈COM r∈REG	Inter-regional sourcing twist term - household purchases.	N
$twist\_isbot_i$	i∈COM	Shift variable on inter-regional sourcing twists.	X

$twist1_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Import / domestic twist term - current production.	N
$twist2_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Import / domestic twist term - capital creation.	N
$twist3_{i,s,r}$	i∈COM s∈SOU r∈REG	Import / domestic twist term - household purchases.	N
$twistlk_{j,r}$	j∈IND r∈REG	Labour / capital twist : regional industry *j,r*.	N
twist_src_bar		Economy-wide import twist shift variable.	X
$twist\_srcr_{i,r}$	i∈COM r∈REG	Cost neutral shift in the ratio of imported to domestic good *i* in region *r*.	N
u_benefit		Aggregate unemployment benefit outlays by the Commonwealth Government.	N
$v3_i$	i∈COM	Commonwealth Government import duty on commodity *i*, expressed as a specific tax.	X
$v4_{i,r}$	i∈COM r∈REG	Commonwealth Government net export tax on commodity *i* from *r* expressed as a specific tax.	X
$vc\_hous_{i,s}$	i∈COM s∈SOU	Commonwealth Government commodity taxes on purchases by households, specific treatment.	X
$vc0\_ind_i$	i∈COM	Commonwealth Government commodity taxes on inputs to capital formation and current production, specific treatment.	X
$vs\_hous_{i,s,r}$	i∈COM s∈SOU r∈REG	Term allowing for specific treatment of regional government commodity taxes on purchases by households.	X
$vs0\_ind_i$	i∈COM	Term allowing for specific treatment of regional government commodity taxes on inputs to current production and capital formation.	X
$wageinc_r$	r∈REG	Aggregate after tax income from wages in region *r*.	N
$x\_cg_{i,s}$	i∈COM s∈SOU	Commonwealth Government usage of commodity *i* from source *s* for current consumption purposes.	N
$x\_cgcon_{i,s}$	i∈COM s∈SOU	Shift variable on Commonwealth Government usage of commodity *i* from source *s* for current consumption purposes.	X
x_exp_i	i∈COM	National volume of exports of commodity *i*	N
$x\_hous_{i,r}$	i∈COM r∈REG	Household *r*'s consumption of commodity *i* regardless of source.	N

x_imp_u	u∈COM	National imports of commodity *u*.	N
x_ism_r	r∈REG	Index of region *r*'s inter-regional imports.	N
x_isx_r	r∈REG	Index of region *r*'s inter-regional exports.	N
$x\_lab_{q,j,r}$	q∈OCC j∈IND r∈REG	Demand for occupation type *q* by regional industry *j,r*	N
$x\_mar1_{u,r,i,s,j,t}$	u∈mar r∈REG i∈COM s∈SOU j∈IND t∈REG	Usage of margin *u* from region *r* on regional industry *j,t*'s usage of good *i* from *s* for current production.	N
$x\_mar2_{u,r,i,s,j,t}$	u∈MAR r∈REG i∈COM s∈SOU j∈IND t∈REG	Usage of margin *u* from region *r* on regional industry *j,t*'s usage of good *i* from *s* for use in capital creation.	N
$x\_mar3_{u,r,i,s,t}$	u∈MAR r∈REG i∈COM s∈SOU t∈REG	Usage of margin *u* from region *r* on regional household *t*'s use of *i* from *s* for consumption.	N
$x\_mar4_{u,r,i,t}$	u∈MAR r∈REG i∈COM t∈REG	Usage of margin *u* from region *r* to facilitate exports of *i* from region *t*.	N
$x\_mar5_{u,r,i,s,t}$	u∈MAR r∈REG i∈COM s∈SOU t∈REG	Usage of margin *u* from region *r* on regional government *t*'s purchases of *i* from *s* for current consumption.	N
$x\_mar6_{u,r,i,s}$	u∈MAR r∈REG i∈COM s∈SOU	Usage of margin *u* from region *r* on purchases of commodity *i* from source *s* by the Commonwealth Government for current consumption.	N
$x\_prim_{v,j,r}$	v∈FAC j∈IND r∈REG	Regional industry *j,r*'s usage of primary factor *v* for current production.	N
x_rate		Exchange rate: $A per unit of foreign currency.	X
$x\_rind_{i,j,r}$	i∈COM j∈IND r∈REG	Output of good *i* by regional industry *j,r*	N

x_s_s	s∈XCOMO	Output for 22 national output sectors.	N
$x\_sg_{i,s,r}$	i∈COM s∈SOU r∈REG	Regional government r's usage of commodity i from source s for current consumption.	N
$x\_sgcon_{i,s,r}$	i∈COM s∈SOU r∈REG	Commodity and source -specific shift variable on regional government r's real consumption purchases.	X
$x\_sr_{s,r}$	s∈XCOMO r∈REG	Output for 22 regional output sectors. Useful for exogenous determination of regional sectoral outputs in historical simulations.	N
$x\_tot_{u,r}$	u∈COM r∈REG	Total output of commodity u in region r.	N
x_total_u	u∈COM	National output of commodity u.	N
x_unemp_r	r∈REG	Number of unemployed in region r	N
$x1_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Usage of commodity i from source s by regional industry j,r for current production	N
$x2_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Usage of commodity i from source s by regional industry j,r for capital creation	N
x2nat		Aggregate economy-wide real gross fixed capital formation: commodity input side.	N
x3nat		Aggregate economy-wide real household consumption: commodity input side.	N
x4nat		Aggregate economy-wide export volumes.	N
x5nat		Aggregate economy-wide real regional government consumption expenditure.	N
x6nat		Aggregate economy-wide real Commonwealth Government consumption expenditure.	N
$x3\_ff\_na_{i,na,r}$	i∈COM na∈NCOM r∈REG	Consumption by regional household r of FEDERAL-F commodity i cross-classified within national accounts consumption commodity *na*.	N
$x3\_imputed_{i,r}$	i∈COM r∈REG	Consumption of i by household r in the absence of taste changes.	N
$x3\_na\_i_{i,r}$	i∈COM r∈REG	Consumption of FEDERAL-F commodity i calculated from consumption of cross classified commodities $x3\_ff\_na_{i,na,r}$.	N
$x3ncom_{na,r}$	na∈NCOM r∈REG	Consumption of national accounts consumption commodity *na* by household r.	N

$x2reg_r$	r∈REG	Real regional gross fixed capital formation, aggregate commodity inputs side.	N
$x3reg_r$	r∈REG	Real regional consumption, aggregate commodity consumption side.	N
$x4reg_r$	r∈REG	Real regional export volume index.	N
$x5reg_r$	r∈REG	Real regional government consumption expenditure index.	N
$x6reg_r$	r∈REG	Real Commonwealth consumption expenditure allocated to region *r*.	N
x4_tax		Commodity-wide shift variable on phantom tax rates.	X
$xcost_{j,r}$	j∈IND r∈REG	Usage of "other costs" by regional industry *j,r*.	N
$xcptax_{j,r}$	j∈IND r∈REG	Demand for Commonwealth Government production tax units.	N
xi_ntrad		Economy-wide export price index - non traditional export commodities.	N
$ximp\_r_{i,r}$	i∈COM r∈REG	Foreign imports of commodity *i* into region *r*.	N
xMnat		National import volume index.	N
$xMreg_r$	r∈REG	Index of real foreign imports into region *r*.	N
$xr\_exp_{i,r}$	i∈COM r∈REG	Volume of exports of commodity *i* from region *r*.	N
$xr\_exp\_old_{i,s}$	i∈COM s∈reg	Forecast value of exports of *i* from region *r* set exogenously in deviation simulation.	X
$xr\_hous_{i,s,r}$	i∈COM s∈SOU r∈REG	Household *r*'s consumption of commodity *i* from source *s*.	N
xrate_r		Real exchange rate: relative traded goods prices.	N
$xsptax_{j,r}$	j∈IND r∈REG	Demand for regional government production tax units.	N
$y\_cgk_{j,r}$	j∈IND r∈REG	Capital formation by the Commonwealth Government in regional industry *j,r*.	N
$y\_kap_{j,r}$	j∈IND r∈REG	Private investment in regional industry *jr*	N
y_nat_j	j∈IND	Economy-wide investment in industry *j*	N
$y\_p56_{j,r}$	j∈IND r∈REG	Total investment in regional industry *jr*	N
y_s_s	s∈XIND	Investment for the national industry sectors in the set XIND	N

$y\_sr_{s,r}$	s∈XIND r∈REG	Investment for the regional industry sectors in the set XIND	N
$y\_sgk_{j,r}$	j∈IND r∈REG	Capital formation by regional government *r* in regional industry *j,r*	N
yshift		Allows the sum of investment across regional industries to diverge from the sum of regional sectoral investments	X
$zact_{j,r}$	j∈IND r∈REG	Regional industry activity levels	N

APPENDIX C. FEDERAL-F COEFFICIENT LISTING

Coefficient	Subscript Range	Description
$A\_BUDGET_{u,r}$	u∈COM r∈REG	Average budget share of commodity *i* in regional household *r*'s total consumption.
$ADJ\_COEFF_{j,r}$	j∈IND r∈REG	Adjustment coefficient governing the speed with which the actual rate of return on regional industry *j,r*'s capital stock is adjusted towards the equilibrium rate of return.
ADJ_COEFF_M		Adjustment factor governing the speed with which the size of the actual net migrant population moves towards that of the desired net migrant population.
AGG_E		Aggregate foreign currency value of exports.
AGG_M		Aggregate foreign currency value of imports.
ALPHA		Labour market adjustment parameter for deviation runs.
B_3CG_u	u∈COM	Share in total imports of *u* of imports of *u* by the Commonwealth Government for current consumption purposes.
$B\_3HOU_{u,r}$	u∈COM r∈REG	Share in total imports of commodity *u* of imports of *u* by regional household *r*.
$B\_3K_{u,j,r,k}$	u∈COM j∈IND r∈REG k∈PUR	Share in total imports of commodity *u* of imports of *u* by regional industry *j,r* for input to current production (*k*=1) and capital formation (*k*=2).
$B\_3SG_{u,r}$	u∈COM r∈REG	Share in the total imports of commodity *u* of imports of *u* by regional government *r* for current consumption purposes.
$B\_CGP_{j,r}$	j∈IND r∈REG	Share of total Commonwealth Government production tax receipts accounted for by production tax collections from regional industry *j,r*.
$B\_COM_{j,r}$	j∈IND r∈REG	Share of regional government r's total commercial land tax receipts attributable to collections from regional industry *j,r*.
B_DUTY_i	i∈COM	Share of import duty collected on imported commodity *i* in total Commonwealth import duty collections.
$B\_EMP_{m,j,r}$	m∈OCC j∈IND r∈REG	Share of employment in occupation *m* in region *r* accounted for by employment in industry *j*.
B_FOUR		Aggregate Commonwealth Government receipts.
$B\_PAYE_{m,j,r}$	m∈OCC j∈IND r∈REG	Share of PAYE tax receipts from occupation m employed in regional industry *j,r* in total PAYE tax receipts from region *r*.
B_SIX		Aggregate Commonwealth Government outlays .

$B\_ZERO_{u,j,r}$	u∈COM j∈IND r∈REG	Share of the output of *u* in *r* accounted for by the production of industry *j*
$B3\_R_r$	r∈REG	Total receipts of regional government *r*.
$B37\_R_{j,r}$	j∈IND r∈REG	Share of regional government *r*'s net production tax receipts attributable to such receipts from regional industry *j,r*.
$B5\_R_r$	r∈REG	Total outlays of regional government *r*.
$BAS1_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Basic value of intermediate input usage of good *i* from source *s* by regional industry *j,r*.
$BAS2_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Basic value of the usage of good *i* from source *s* by regional industry *j,r* for input to capital creation.
$BAS3_{i,s,r}$	i∈COM s∈SOU r∈REG	Basic value of household *r*'s consumption of good *i* from source *s*.
$BAS4_{i,s}$	i∈COM s∈REG	Basic value of exports of good *i* from region *s*.
$BAS5_{i,s,r}$	i∈COM s∈SOU r∈REG	Basic value of state government *r*'s purchases of good *i* from *s* for current consumption
$BAS6_{i,s}$	i∈COM s∈REG	Basic value of the Commonwealth Governments purchases of commodity *i* from *s* for current consumption purposes.
$BASE\_15\_PLUS_r$	r∈REG	Benchmark year population aged 15 plus, by region.
BASE_GDP		Australian GDP - Expenditure approach.
$BASE\_GSP_r$	r∈REG	Gross regional product of region *r*- Expenditure side.
$BC\_4H_{i,r}$	i∈COM r∈REG	Share in total Commonwealth Government export tax receipts of export tax collected on exports of commodity *i* from region *r*.
$BC\_S12_{i,s,j,r,k}$	i∈COM s∈SOU j∈IND r∈REG k∈PUR	Share in total Commonwealth Government commodity tax receipts of commodity tax receipts on purchases of commodity *i* from source *s* by regional industry *j,r* for input to current production (*k*=1) and capital formation (*k*=2).
$BC\_S3_{i,s,r}$	i∈COM s∈SOU r∈REG	Share in total Commonwealth Government commodity tax receipts of commodity tax receipts from commodity *i* from source *s* purchased by regional household *r*.

$BCR\_S12_{i,s,j,r,v}$	i∈COM s∈SOU j∈IND r∈REG v∈PUR	Share in the total Commonwealth Government commodity tax collections from *r* of such taxes collected on purchases of commodity *i* from source *s* used by regional industry *j,r* for current production (*k*=1) or capital formation (*k*=2).
$BCR\_S3_{i,s,r}$	i∈COM s∈SOU r∈REG	Share in the total Commonwealth Government commodity tax collections from *r* of such taxes collected on purchases of commodity *i* from source *s* by households in the region.
$BETA_{j,r}$	j∈IND r∈REG	Elasticity of the expected rate of return on capital in regional industry *j,r* to increases in its capital stock - Operative under the comparative static model closure.
$BETA1_{i,j,r}$	i∈COM j∈IND r∈REG	Coefficient for CRESH twist - current production.
$BETA2_{i,j,r}$	i∈COM j∈IND r∈REG	Coefficient for CRESH twist - capital creation.
$BETA3_{i,r}$	i∈COM r∈REG	Coefficient for CRESH twist - households.
$BK\_INC_{t,j,r}$	j∈IND t∈OWNERS r∈REG	Share of non-PAYE taxes collected from owner type *t* relating to returns from regional industry *j,r* accounted for by income taxes on capital.
$BL\_INC_{t,j,r}$	j∈IND t∈OWNERS r∈REG	Share of non-PAYE taxes collected from owner type *t* relating to returns from regional industry *j,r* accounted for by income taxes on land.
BR_INC_r	r∈ REG	Share of Commonwealth Government other income tax receipts from region *r* in total economy-wide Commonwealth Government other income tax receipts.
BR_PAYE_r	r∈ REG	Share of PAYE tax receipts from region *r* in total Commonwealth PAYE tax receipts.
$BTJ\_INC_{t,j,r}$	j∈IND t∈OWNERS r∈ REG	Share of non-PAYE income tax receipts accounted for by receipts from owner type *t* relating to capital returns from regional industry *j,r*.
C_TWIST_SRC		Coefficient for allocating more of the adjustment to achieve a given international or inter-regional import target towards those commodities that are experiencing relatively rapid rates of output growth.
CGO1		Commonwealth Government consumption expenditure, economy-wide.
$CGO3_r$	r∈ REG	Commonwealth Government outlays on unemployment benefits in region *r*.
$CGO5_r$	r∈ REG	Commonwealth Government transfers (other than interest and unemployment benefits) to households in region *r*.

CGOV_PHANT		Commonwealth Government's collection of phantom taxes.
$CGOV\_R_r$	r∈ REG	Aggregate Commonwealth Government consumption expenditure in region *r*.
$CGOV\_SH_r$	r∈ REG	A factor for allocating Commonwealth Government imports to regions. Equal to share of region *r*'s GSP at factor cost in national GSP at factor cost.
CGR1		PAYE tax receipts of the Commonwealth Government.
CGR2		Commonwealth income taxes on land and capital rentals.
CGR3		Commonwealth Government tariff receipts.
CGR4		Commonwealth Government tariff receipts.
CGR5		Commonwealth Government sales tax receipts.
CGR6		Commonwealth Government export tax receipts.
$CGR3\_R_r$	r∈ REG	Commonwealth Government tariff revenue attributed to foreign imports into *r*.
CGR4		Commonwealth Government economy-wide production tax collections.
$CGR4\_R_r$	r∈ REG	Commonwealth Government production tax collections from region *r*.
CGR5		Economy-wide collection of Commonwealth Government sales tax revenue.
$CGR5\_R_r$	r∈ REG	Regional collection of Commonwealth Government sales tax revenue.
CGR6		Commonwealth Government economy-wide export tax collections.
$CGR6\_R_r$	r∈ REG	Commonwealth Government export tax collections from region *r*.
$CGR7_r$	r∈ REG	Other Commonwealth Government tax receipts.
$CHKGR1_{j,r}$	j∈IND r∈REG	One if capital growth has fallen below minimum capital growth rate, otherwise zero.
$CHKGR2_{j,r}$	j∈IND r∈REG	One if capital growth has risen above maximum capital growth rate, otherwise zero.
$CINVSH_{j,r}$	j∈IND r∈REG	The share of total investment in regional industry *j,r* attributable to investment by the Commonwealth Government.
CON_R_r	r∈ REG	Aggregate household consumption in region *r*.
$COUT\_1_{i,s}$	i∈COM s∈SOU	Share in total Commonwealth Government outlays of the purchaser's value of commodity *i* from source *s* for current consumption by the Commonwealth Government.

$COUT\_2_{j,r}$	$j \in IND$ $r \in REG$	Share in total Commonwealth Government outlays of investment expenditure in regional industry *j*,*r*.
$COUT\_3_r$	$r \in REG$	Share in total Commonwealth Government outlays of unemployment benefit payments to recipients in region *r*.
$COUT\_4_r$	$r \in REG$	Share in total Commonwealth Government outlays of transfers to regional government *r*.
$COUT\_5_r$	$r \in REG$	Share in total Commonwealth Government outlays of transfers (other than interest and unemployment benefits) to persons in region *r*.
COUT_6		Share in total Commonwealth Government outlays of net interest payments.
COUT_7		Share in total Commonwealth Government outlays of "other outlays".
CREC_1		Share of PAYE receipts in total Commonwealth Government receipts.
CREC_2		Share of other income tax receipts in total Commonwealth Government receipts
CREC_3		Share of import duties in total Commonwealth Government receipts.
CREC_4		Share of production tax receipts in total Commonwealth Government receipts.
CREC_5		Share of commodity tax receipts in total Commonwealth Government receipts.
CREC_6		Share of net export tax receipts in total Commonwealth Government receipts.
CREC_7		Share of other receipts in total Commonwealth Government receipts.
$CREC\_8_r$	$r \in REG$	Share of returns from capital in total Commonwealth Government receipts.
CREC_9		Share of returns from phantom taxes in total Commonwealth Government receipts.
CS_r	$r \in REG$	Share of region *r* household consumption in total national consumption.
CWTAX3		Total collections by the Commonwealth Government of indirect taxes on household consumption.
DAMP		Parameter for dampening export volume responses during deviation simulations.
$DEP_{j,r}$	$j \in IND$ $r \in REG$	Annual depreciation rate on capital in regional industry *j*,*r*.
DES_MIGRANTS		Equilibrium level of the net migrant population aged 15 plus.

DEX1_1$_{i,s,j,r,k}$	i∈COM s∈SOU j∈IND r∈REG k∈PUR	Indexing parameter, which, if set equal to 1, fixes the regional CPI deflated value of regional government *r*'s commodity taxes on purchases of commodities for input to current production and capital formation.
DEX1_2$_{i,s,j,r,k}$	i∈COM s∈SOU j∈IND r∈REG k∈PUR	Indexing parameter which, if set equal to 1, institutes an ad valorem treatment for regional government commodity taxes on purchases of commodities for input to current production and capital formation.
DEX1_3$_{i,s,j,r,k}$	i∈COM s∈SOU j∈IND r∈REG k∈PUR	Indexing parameter which, if set equal to 1, institutes a specific treatment for regional government commodity taxes on purchases of commodities for input to current production and capital formation.
DEX2_1$_{i,s,j,r,k}$	i∈COM s∈SOU j∈IND k∈PUR r∈REG	Indexing parameter which, when set equal to 1, indexes to the national consumer price index the per unit Commonwealth sales tax on source specific commodities used by regional industries for current production and capital formation.
DEX2_2$_{i,s,j,r,k}$	i∈COM s∈SOU j∈IND k∈PUR r∈REG	Indexing parameter that when set equal to 1 institutes an ad-valorem treatment for the per-unit Commonwealth sales tax on source specific commodities used by regional industries for current production and capital formation.
DEX2_3$_{i,s,j,r,k}$	i∈COM s∈SOU j∈IND k∈PUR r∈REG	Indexing parameter that, when set equal to zero, institutes a specific treatment for the per-unit Commonwealth sales tax on source specific commodities used by regional industries for current production and capital formation.
DEX3_1$_{i,s,r}$	i∈COM s∈SOU r∈ REG	Indexing parameter which, if set equal to 1, fixes the real (regional CPI deflated) value of regional government commodity taxes on purchases by households.
DEX3_2$_{i,s,r}$	i∈COM s∈SOU r∈ REG	Indexing parameter which, if set equal to 1, institutes an ad-valorem treatment of regional government commodity taxes on purchases by households.
DEX3_3$_{i,s,r}$	i∈COM s∈SOU r∈ REG	Indexing parameter which, if set equal to 1, institutes a specific treatment of regional government commodity taxes on purchases by households.
DEX32_1$_{i,s,r}$	i∈COM s∈SOU r∈REG	Indexing parameter which, when set equal to 1, indexes the per unit value of Commonwealth sales taxes on source-specific purchases by households.
DEX32_2$_{i,s,r}$	i∈COM s∈SOU r∈REG	Indexing parameter which, when set equal to 1, institutes an ad-valorem treatment for the per-unit value of Commonwealth sales taxes on source-specific purchases by households.

DEX32_3$_{i,s,r}$	i∈COM s∈SOU r∈REG	Indexing parameter which, when set equal to 1, institutes a specific treatment for the per-unit value of Commonwealth sales taxes on source-specific purchases by households.
DISEQ_B$_{j,r}$	j∈IND r∈REG	Difference between the database value of the expected rate of return on regional industry *j*,*r*'s capital stock, and the equilibrium expected rate of return on that stock.
E_OCC$_{m,r}$	m∈OCC r∈ REG	Share of occupation *m* in region *r* in total region *r* employment.
E_REG$_r$	r∈ REG	Share of employment in region *r* in total national employment.
EE_CG_1$_{i,s}$	i∈COM s∈SOU	Share of the basic value in the purchaser's price of commodity *i* from source *s* used by the Commonwealth Government for current consumption.
EE_CG_2$_{i,s}$	i∈COM s∈SOU	Share of the value of margins in the price faced by the Commonwealth Government for commodity *i* from source *s* used for current consumption.
EE_CG_3$_{i,s}$	i∈COM s∈REG	Share of the value of phantom taxes in the price faced by the Commonwealth Government for commodity *i* from source *s* for input to current consumption.
EE_H_1$_{i,s,r}$	i∈COM s∈SOU r∈ REG	Share in the purchaser's price of the basic value of good *i* from source *s* used by regional household *r*.
EE_H_2$_{i,s,r}$	i∈COM s∈SOU r∈ REG	Share of regional government taxes in the purchaser's price of good *i* from source *s* used by regional household *r*.
EE_H_3$_{i,s,r}$	i∈COM s∈SOU r∈reg	Share of Commonwealth Government taxes in the purchaser's price of good *i* from source *s* used by regional household *r*.
EE_H_4$_{i,s,r}$	i∈COM s∈SOU r∈ REG	Share of margins in the purchaser's price of good *i* from source *s* used by regional household *r*.
EE_H_5$_{i,s,r}$	i∈COM s∈REG r∈ REG	Share of phantom taxes in the purchaser's price of good *i* from source *s* used by regional household *r*.
EE_SG_1$_{i,s,r}$	i∈COM s∈SOU r∈ REG	Share of the basic value in the price faced by regional government *r* for commodity *i* from source *s*.
EE_SG_2$_{i,s,r}$	i∈COM s∈SOU r∈ REG	Share of the value of margins in the price faced by regional government *r* for commodity *i* from source *s*.
EE_SG_3$_{i,s,r}$	i∈COM s∈REG r∈ REG	Share of the value of phantom taxes in the price faced by regional government *r* for commodity *i* from source *s*.
EE4_1$_{i,r}$	i∈COM r∈ REG	Share of the basic value of export commodity *i* from region *r* in the total price of export commodity *i* at the port of exit.

$EE4\_2_{i,r}$	i∈COM r∈ REG	Share in the at-port value of export commodity *i* from region *r* of Commonwealth net export taxes.
$EE4\_3_{i,r}$	i∈COM r∈ REG	Share in the at-port value of export commodity *i* from region *r* of margins.
$EE4\_4_{i,r}$	i∈COM r∈ REG	Share in the at-port value of export commodity *i* from region *r* of phantom taxes.
EMP_R_r	r∈ REG	Number of persons employed in region *r*.
EMPLOY		Index of the aggregate employment in year *t*, deviation / policy value.
EMPLOY_OLD		Index of the aggregate employment in year *t*, base historical / forecast value.
$EPSIL_{i,r}$	i∈COM r∈ REG	Household *r*'s commodity *i* expenditure elasticity.
$ESHARE_{u,r}$	u∈COM r∈ REG	Share of *u* from *r* in aggregate national export earnings.
$ETA_{i,k,r}$	i∈COM k∈COM r∈REG	Elasticity of household *r*'s demand for commodity *i* with respect to the household purchaser's price of commodity *k*.
EXP_R_r	r∈REG	Total value of foreign exports from region *r*.
EXP_UEB_r	r∈REG	Expected per-person nominal unemployment benefit in region *r*.
EXP_WAGE_r	r∈REG	Expected per-person nominal take-home wage in region *r*.
FOR_INV_r	r∈REG	Net change in foreign assets held by region *r* households, foreign currency value.
FOR_NASSET_r	r∈REG	Foreign net assets of regional household *r*, foreign currency value.
$FOR\_NET\_INT_r$	r∈REG	Household net interest receipts on net foreign assets, foreign currency value.
FRISCH		Frisch parameter.
$GAMMA_i$	i∈COM	Reciprocal of the export demand elasticity for commodity *i*.
GAMMAN		Reciprocal of economy-wide non-traditional export demand elasticity.
$GDPI\_R_r$	r∈REG	Gross regional product from the income side - region *r*.
GNE		Gross national expenditure.
GRE_r	r∈REG	Gross regional expenditure of region *r*.
GSP_FACR_r	r∈REG	Region *r*'s gross regional product at factor cost.

H_BEN		Indexing parameter determining the relationship between movements in the national consumer price index and movements in the per-person unemployment benefit payment.
$H\_BUS_{j,r}$	j∈IND r∈REG	Indexing parameter that fixes the relationship between movements in the gross rental price of capital in regional industry *j,r* and movements in the commercial land tax payable on that capital.
$H\_FAC_{v,j,r}$	v∈FAC j∈IND r∈REG	Share of the cost of factor *v* in the total costs of regional industry *j,r*.
$H\_OC_{j,r}$	j∈IND r∈REG	Share of the value of other cost tickets in regional industry *j,r*'s total costs.
H_RES_r	r∈REG	Indexing parameter that sets the relationship between movements in the gross rental price of capital in regional industry *j,r* and the per unit value of residential land taxes payable on that capital.
$H\_REV_{i,j,r}$	i∈COM j∈IND r∈REG	Share of commodity *i* in the total revenue of regional industry *j,r*. Identity matrix in current implementation of the model.
$H1_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Share of the purchaser's value of commodity *i* from source *s* in the total costs of regional industry *j,r*.
$H2S_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Share of the purchaser's price of commodity *i* from source *s* in the total cost of producing a unit of capital in regional industry *j,r*.
$H3\_1_i$	i∈COM	Parameter which, when set equal to 1, indexes the tariff per unit import of commodity *i* to the national consumer price index.
$H3\_2_i$	i∈COM	Parameter which, when set equal to 1, institutes an ad-valorem treatment of the tariff per unit import of commodity *i*.
$H3\_3_i$	i∈COM	Parameter which, when set equal to 1, institutes a specific treatment of the tariff per unit import of commodity *i*.
$H34R_r$	r∈REG	Indexing parameter that fixes the relationship between movements in the nominal gross income of households of region *r* and their payments of regional government other income reducing taxes.
$H38R_r$	r∈REG	Indexing parameter that fixes the relationship between movements in other receipts by regional government r and the economy-wide consumer price index.
$H4\_1_i$	i∈COM	Parameter which, when set equal to 1, indexes the net export tax per unit export of *i* to the national consumer price index.
$H4\_2_i$	i∈COM	Parameter which, when set equal to 1, establishes an ad-valorem treatment of the net export tax per unit export of *i*.
$H4\_3_i$	i∈COM	Parameter which, when set equal to 1, establishes a specific treatment of the net export tax per unit export of *i*.

$H5R\_1_r$	r∈REG	Indexing parameter that determines the relationship between movements in region *r* government transfers to persons and the economy-wide consumer price index.
HC_4_r	r∈REG	Indexing parameter which fixes the relationship between movements in Commonwealth transfers to regional government *r* and the national consumer price index.
HC_5_r	r∈REG	Indexing parameter which fixes the relationship between movements in Commonwealth transfers (other than unemployment benefits) to persons in region *r* and the national consumer price index.
$HCGPTAX_{j,r}$	j∈IND r∈REG	Share of the value of Commonwealth net production taxes in the total costs of regional industry *j,r*.
$HH\_PHANT_{i,s,t}$	i∈COM s∈REG t∈OWNERS	Owner type *t*'s share of the phantom tax revenue accruing on on commodity *i* from source region *s*.
HOTHER_C		Indexing parameter fixing the relationship between Commonwealth Government Other Receipts and the economy-wide consumer price index.
$HOUS\_PHANT_r$	r∈REG	Phantom tax revenue accruing to households in region *r*.
$HOVE2_j$	j∈IND	Indexing parameter which fixes the relationship between movements in the income tax rate per unit of capital employed in regional industry *j,r* and in the rental rate on *j,r* capital.
$HOVE3_j$	j∈IND	Indexing parameter which fixes the relationship between movements in the income tax rate per unit of land employed in regional industry *j,r* and in the rental rate on *j,r* land.
$HP\_2_{j,r}$	j∈IND r∈REG	Indexing parameter determining the relationship between movements in the regional CPI index and movements in the regional government *r* net production tax rate operating on regional industry j,*r*.
$HP\_3_{j,r}$	j∈IND r∈REG	Parameter fixing the relationship between movements in the regional consumer price index and movements in the per-unit Commonwealth production tax applicable to regional industry *j,r*.
HPHANT1		Indexing parameter which, when set equal to 1, allows per-unit phantom taxes to be indexed to the regional consumer price index.
HPHANT2		Indexing parameter which, when set equal to 1, allows per-unit phantom taxes to be determined as ad-valorem taxes.
HPHANT3		Indexing parameter which, when set equal to 1, allows per-unit phantom taxes to be determined as specific taxes.
$HSGPTAX_{j,r}$	j∈IND r∈REG	Share of the value of regional government net production taxes in the total costs of regional industry *j,r*.
$hW1_{m,j}$	m∈OCC j∈IND	Indexing parameter that fixes the relationship between movements in the pre-tax wage of occupation *m* employed in regional industry *j,r*, and movements in the economy-wide consumer price index.

$HW1R_{m,j,r}$	m∈OCC j∈IND r∈REG	Indexing parameter that fixes the relationship between movements in the pre-tax wage of occupation *m* employed in regional industry *j,r*, and movements in the region *r* consumer price index.
$HW2_{m,j}$	m∈OCC j∈IND	Indexing parameter that fixes the relationship between movements in the PAYE tax payable per unit of labour of occupation type *m* employed in regional industry *j,r* and movements in the pre PAYE tax wage of that labour.
$HW3_{m,j,r}$	m∈OCC j∈IND r∈REG	Indexing parameter that fixes the relationship between movements in the payroll tax payable per unit of labour of occupation type *m* employed in regional industry *j,r* and movements in the pre PAYE tax wage of that labour.
IMP_R_r	r∈REG	Total value of foreign imports into region *r*.
$IMPI\_R_{i,r}$	i∈COM r∈REG	Ex-duty value of foreign imports of *i* into region *r*.
INDTAXREV		Total national collections of indirect taxes.
$INDTAXREV\_R_r$	r∈REG	Total indirect tax collections in region *r*.
INF		Rate of consumer price inflation.
INT		Nominal interest rate.
INV_R_r	r∈REG	Aggregate gross fixed capital formation in region *r*.
$ISEXP\_TOT_r$	r∈REG	Total inter-regional exports from region *r*.
$ISIMP\_TOT_r$	r∈REG	Total inter-regional imports into region *r*.
$K\_GROSSCAP_{k,j,r}$	k∈REG j∈IND r∈REG	Gross returns from capital in regional industry *j,r* accruing to household type *k*.
$K\_GROSSLAND_{k,j,r}$	k∈REG j∈IND r∈REG	Gross returns from land in regional industry *j,r* accruing to household type *k*.
$K\_GROSSRENT_k$	k∈REG	Gross capital and land rentals from regional industry *j,r* accruing to household type *k*.
$K\_IND_{j,r}$	j∈IND r∈REG	Share of the capital in regional industry *j,r* in total region *r* capital.
$K\_NETKTAX_k$	k∈REG	Net capital and land taxes payable by household type *k*.
K_REG_r	r∈REG	Share of region *r*'s capital in the total national capital stock.
$KGR\_COEFF_{j,r}$	j∈IND r∈REG	Elasticity of regional industry *j,r*'s capital growth rate with respect to changes in its rate of return and the position of its capital supply schedule.
$KTDCOM_{j,r,k}$	j∈IND r∈REG k∈REG	Commercial land tax payable by household type *k* on capital owned in regional industry *j,r*.

L_CPI_r	r∈REG	Regional CPI index for multi-step calculations involving the migration module.
LAB_FORCE_r	r∈REG	Regional labour force.
LEV_CPI_B		Initial solution for the level of the consumer price index at the commencement of the simulation year.
LEV_CPI_L		Level of the consumer price index at the commencement of the database year.
LEV_CPI_L_B		Initial solution for the level of the consumer price index at the commencement of the database year.
$LKSHARE_{v,j,r}$	v∈FAC j∈IND r∈REG	Labour share in total input of labour and capital to regional industry *j,r*.
$M\_CG_{u,t,i,s}$	u∈MAR t∈REG i∈COM s∈SOU	Share of margin *u* from region *t* in the total value of margins used to facilitate the transfer of commodity *i* from source *s* to the Commonwealth Government for current consumption purposes.
$M\_H_{u,t,i,s,r}$	u∈MAR t∈REG i∈COM s∈SOU r∈REG	Share of margin *u* from region *t* in total margins used to facilitate the transfer of commodity *i* from region *s* to household *r* for current consumption.
$M4_{u,t,i,r}$	u∈MAR t∈REG i∈COM r∈REG	Share of margin *u* from region *t* in the total value of margins used in facilitating the international export of commodity *i* from region *r*.
$MAR1_{i,s,j,r,u,t}$	i∈COM s∈SOU j∈IND r∈REG u∈MAR t∈REG	Use of margin *u* from region *t* on intermediate input usage of good *i* from *s* by regional industry *j,r*.
$MAR2_{i,s,j,r,u,t}$	i∈COM s∈SOU j∈IND r∈REG u∈MAR t∈REG	Use of margin *u* from region *t* on purchases of good *i* from *s* by regional industry *j,r* for use in capital creation
$MAR3_{i,s,r,u,t}$	i∈COM s∈SOU r∈REG u∈MAR t∈REG	Use of margin *u* from region *t* on household *r*'s purchases of good *i* from *s*.

$MAR4_{i,s,u,t}$	i∈COM j∈IND r∈REG u∈MAR t∈REG	Use of margin *u* from region *t* on exports of *i* from *s*.
$MAR5_{i,s,r,u,t}$	i∈COM s∈SOU r∈REG u∈MAR t∈REG	Use of margin *u* from region *t* on regional government *r*'s use of *i* from *s* for current consumption.
$MAR6_{i,s,u,t}$	i∈COM s∈SOU r∈REG u∈MAR t∈REG	Use of margin *u* from region *t* on the Commonwealth Government's purchases of good *i* from source *s* for current consumption.
$MAR\_BUDGET_{i,r}$	i∈COM r∈REG	Marginal budget share of commodity *i* in household *r*'s consumption.
MIGRANTS_15		The actual size of the net migrant population aged 15 and over.
$MM\_SG_{u,t,i,s,r}$	u∈MAR t∈REG i∈COM s∈SOU r∈REG	Share of margin *u* from region *t* in the total value of margins used in facilitating the transfer of commodity *i* from source *s* to regional government *r* for current consumption.
$MSHARE_u$	u∈COM	Share of commodity *u* in the total foreign currency value of foreign imports.
$MU1_{q,j,r}$	q∈OCC j∈IND r∈REG	Take home wages paid to occupation *q* employed in regional industry *j,r*.
$MU2_{q,j,r}$	q∈OCC j∈IND r∈REG	PAYE taxes paid by occupation *q* employed in regional industry *j,r*.
$MU3_{q,j,r}$	q∈OCC j∈IND r∈REG	Payroll taxes paid on the wages of occupation *q* employed in regional industry *j,r*.
$MV1_{t,j,r}$	t∈OWNERS j∈IND r∈REG	Post-tax net capital rental received by owner type *t* from its ownership of capital in regional industry *j,r*.
$MV2_{t,j,r}$	t∈OWNERS j∈IND r∈REG	Income tax payable by owner type *t* on capital rentals from regional industry *j,r*.
$MV3_{t,j,r}$	t∈OWNERS j∈IND r∈REG	Residential land tax payments by owner type *t* on capital rental from regional industry *j,r*.

$MW1_{u,j,r}$	u∈OWNERS j∈IND r∈REG	Post tax net rental receipts received by owner type *t* on its ownership of land in regional industry *j,r*.
$MW2_{u,j,r}$	u∈OWNERS j∈IND r∈REG	Residential land tax payments paid by owner *t* on its ownership of land in regional industry *j,r*.
$MX1_{j,r}$	j∈IND r∈REG	State government production tax paid by regional industry *j,r*.
$MX2_{j,r}$	j∈IND r∈REG	Commonwealth Government production tax paid by regional industry *j,r*.
$MX3_{j,r}$	j∈IND r∈REG	Use of working capital by regional industry *j,r*.
$MZ\_R_{i,r}$	i∈COM r∈REG	Allocation to regions of tariff revenues by commodity.
$NATGROWTH_r$	r∈REG	Rate of natural population growth in the database year. Eg. 0.01
NET_FISCAL_r	r∈REG	Expected per-person nominal net fiscal benefit in region *r*.
NET_WAGE_r	r∈REG	Aggregate nominal take-home wages in region *r*.
$OHHNI_r$	r∈REG	Other household nominal income.
OS_DEBTF		Net liabilities of the Commonwealth Government - foreign currency value.
OS_DEBTRr	r∈REG	Net foreign debt of regional government *r* - foreign currency value.
$OXX3_t$	t∈OWNERS	Aggregate ownership of working capital by owner type *t*.
$PCAP\_AT\_T_{j,r}$	j∈IND r∈REG	Price of capital stocks of regional industry *j,r* at the commencement of the simulation year.
$PCAP\_AT\_T1_{j,r}$	j∈IND r∈REG	Price of capital stocks of regional industry *j,r* at the end of the simulation year.
$PCAP\_AT\_T1\_B_{j,r}$	j∈IND r∈REG	Base solution to the asset price of capital of regional industry *j,r* at the end of the simulation year.
$PCAP\_AT\_T\_B_{j,r}$	j∈IND r∈REG	Base solution to the asset price of capital of regional industry *j,r* at the start of the simulation year.
$PCAP\_J_{j,r}$	j∈IND r∈REG	Average asset price of capital in regional industry *j,r*.
$PCAP\_J\_B_{j,r}$	j∈IND r∈REG	Base solution to the average asset price of capital in regional industry *j,r*.
PHI		Exchange rate: $A per foreign currency unit.
$POWTAX1_{i,s,r}$	i∈COM s∈REG r∈REG	Power of the phantom tax on inputs to current production.

$POWTAX2_{i,s,r}$	i∈COM s∈REG r∈REG	Power of the phantom tax on inputs to capital creation.
$POWTAX3_{i,s,r}$	i∈COM s∈REG r∈REG	Power of the phantom tax on inputs to households.
$POWTAX4_{i,r}$	i∈COM r∈REG	Power of the phantom tax on exports.
$POWTAX5_{i,s,r}$	i∈COM s∈REG r∈REG	Power of the phantom tax on inputs to regional governments.
$POWTAX6_{i,s}$	i∈COM s∈REG	Power of the phantom tax on inputs to Commonwealth Government.
$PRIMTOT_{j,r}$	j∈IND r∈REG	Total value added in regional industry *j,r*.
$PRINVSH_{j,r}$	j∈IND r∈REG	Share of private investment in the total investment in regional industry *j,r*.
PSBR_F0		Initial value of the Commonwealth Government borrowing requirement.
PSBR_F_FC		Base solution for the foreign currency value of the Commonwealth Government borrowing requirement.
$PSBR\_R0_r$	r∈REG	Initial value of the borrowing requirement of regional government *r*, in Australian dollars.
$PSBR\_R\_FC_r$	r∈REG	Base solution for the foreign currency value of regional government *r*'s borrowing requirement.
$PV1_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Purchases value of good *i* from *s* used as intermediate input by regional industry *j,r*
$PV2_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Purchases value of good *i* from *s* used by *j r* for capital creation.
$PV3_{i,s,r}$	i∈COM s∈SOU r∈REG	Purchases value of commodity *i* from source *s* consumed by household *r*.
$PV4_{i,r}$	i∈COM r∈REG	$A value of foreign exports of *i* from region *r* at purchaser's prices.
$PV5_{i,s,r}$	i∈COM s∈SOU r∈REG	Purchases value of commodity *i* from source *s* consumed by regional government *r*.

$PVCG_{i,s}$	i∈COM s∈SOU	Purchases value of commodity *i* from source *s* used by the Commonwealth Government for current consumption.
$QCAPatT_{j,r}$	j∈IND r∈REG	Quantity of capital stocks in regional industry *j,r* at the commencement of the simulation year.
$QCAP\_OWN\_TJR_{t,j,r}$	t∈OWNERS2 j∈IND r∈REG	Ownership of capital quantities in regional industry *j,r*.
$QCAP\_OWN\_T_t$	t∈OWNERS2	Aggregate base year quantity of capital owned by *t*.
$QCAPatT\_BASE_{j,r}$	j∈IND r∈REG	Quantity of capital stocks in regional industry *j,r* at the commencement of the database year.
$QCAPatTPLUS1_{j,r}$	j∈IND r∈REG	Quantity of the capital stock in regional industry *j,r* at the end of the simulation year.
$QINV\_BASE_{j,r}$	j∈IND r∈REG	Base value for the quantity of investment by regional industry *j,r*.
$QINVEST_{j,r}$	j∈IND r∈REG	Quantity of investment by regional industry *j,r*.
$QNET\_I\_TOT_t$	t∈OWNERS2	National net investment by owner type *t*.
$QSH1_{j,r}$	j∈IND r∈REG	Ratio of the gross (before depreciation) to net (after depreciation) post-tax rate of return in regional industry *j,r*.
$QSH2_{j,r}$	j∈IND r∈REG	Ratio of the pre-tax rental price of a unit of capital in regional industry *j,r* to its post-tax rental price.
$R\_GROSSRENT_r$	r∈REG	Gross capital and land rentals accruing to the residents of region *r*.
$R\_NETKTAX_r$	r∈REG	Net capital and land taxes payable by household *r*.
R_TAXSUM_r	r∈REG	Total net taxes, fees, fines, transfers, paid by residents of region *r*.
$REAL\_EXP\_PCY_r$	r∈REG	Expected real per-capita (non-capital and land) income in region *r*.
RINT		Real interest rate
$RINT\_PT\_SE_{j,r}$	j∈IND r∈REG	Post-tax real discount factor.
$ROLL\_SK_{m,j,r}$	m∈OCC j∈IND r∈REG	Share of regional government *r*'s payroll tax receipts attributable to payroll collections from occupation *m* employed in industry *j*.
RWAGE		Index of the real CPI-deflated pre-tax wage in year *t*, deviation / policy run value.
RWAGE_OLD		Index of the real CPI-deflated pre-tax wage in year *t*, base forecast / historical value.
RWAGE_B		Index of the real CPI-deflated pre-tax wage in year *t*-1, deviation / policy run value.

RWAGE_OLD_B		Index of the real CPI-deflated pre-tax wage in year *t*-1, base forecast / historical value.
RWAGE_L_B		Index of the real CPI-deflated pre-tax wage in year *t*-2, deviation / policy run value.
RWAGE_O_L_B		Index of the real CPI-deflated pre-tax wage in year *t*-2, base forecast / historical value.
$S\_SGREC_{k,r}$	k∈NSR r∈REG	Share of the total revenue of regional government *r* attributable to: payroll tax receipts (k=1); residential land tax receipts (k=2); commercial land tax receipts (k=3); other income reducing taxes (k=4); transfers from the Commonwealth Government (k=5); commodity tax receipts (k=6); production tax receipts (k=7); other receipts (k=8); and returns on capital (k=9); and residual other receipts (k=10).
$S51_{i,s,r}$	i∈COM s∈SOU r∈REG	Share in total region *r* government outlays of current expenditure at purchaser's prices on good *i* from source *s*.
$S52_{i,r}$	j∈IND r∈REG	Share in total region *r* government outlays of capital expenditure at purchaser's prices on good *i* from source *s*.
$S53_r$	r∈REG	Share of transfers to persons in region *r* of the total outlays of regional government *r*.
$S54_r$	r∈REG	Share of net interest payments overseas in the total outlays of regional government *r*.
$S55_r$	r∈REG	Share of residual outlays in the total outlays of regional government *r*.
$SALES_{i,r}$	i∈COM r∈REG	Total sales of commodity *i* from region *r*.
$SAVINGS_r$	r∈REG	Household gross savings.
$SGO1_r$	r∈REG	Current consumption expenditure by regional government *r*.
$SGO3_r$	r∈REG	Transfers to persons by regional government *r*.
$SGOV\_PHANT_r$	r∈REG	Regional government *r*'s collection of phantom taxes.
$SGOV\_R_r$	r∈REG	Aggregate regional government consumption expenditure of region *r*.
$SGR4_r$	r∈REG	Receipts of income reducing taxes by regional government *r*.
$SGR6_r$	r∈REG	Aggregate commodity tax receipts of regional government *r*.
$SGR7_r$	r∈REG	Aggregate production tax receipts of regional government *r*.
$SGR8_r$	r∈REG	Other tax receipts by regional government *r*.

$SH1_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Share of the purchaser's value of commodity *i* from source *s* used by regional industry *j,r* in the total (across all sources) purchaser's value of *i* used by *j,r* in current production.
$SH2_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	Share of the purchaser's value of commodity *i* from source *s* used by regional industry *j,r* in the total (across all sources) purchaser's value of *i* used by *j,r* in capital formation.
$SH4_{i,r}$	i∈COM r∈REG	Share of the purchaser's value of export commodity *i* from region *r* in total exports of commodity *i*.
$SHARE\_KR_{k,r}$	k∈REG r∈REG	Share of household type *k* currently resident in region *r*.
$SHOCC_{q,j,r}$	q∈OCC j∈IND r∈REG	Share of the value of occupation *q* labour costs in the total labour costs of regional industry *j,r*.
$SHOIRJ_{i,j,r}$	i∈COM j∈IND r∈REG	Matrix mapping the output of commodity *i* to the activity level of regional industry *j,r*. An identity matrix in the current model implementation.
$SH3_{i,s,r}$	i∈COM s∈SOU r∈REG	Share of the purchaser's value of commodity *i* from source *s* in the total value of commodity *i* purchased by household *r* irrespective of source.
$SHSGINV_{i,r}$	i∈IND r∈REG	Share of regional government *r*'s total investment accounted for by in regional industry *i,r*.
$SHSTAR1_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	CRESH modified share of the purchaser's value of good *i* from source *s* in regional industry *j,r*''total purchases of good *i* for input to current production.
$SHSTAR2_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	CRESH modified share of the purchaser's value of good *i* from source *s* in regional industry *j,r*'s total purchases of good *i* for input to capital formation.
$SHSTAR3_{i,s,r}$	i∈COM s∈SOU r∈REG	CRESH modified share of the purchaser's value of good *i* from source *s* in regional household *r*'s total purchases of good *i*.
$SHSTAROC_{q,j,r}$	q∈OCC j∈IND r∈REG	CRESH modified share of the labour cost of occupation *q* in the total labour cost of regional industry *j,r*.
$SHSTARPR_{v,j,r}$	v∈FAC j∈IND r∈REG	CRESH modified share of primary factor *v* in regional industry *j,r*'s total usage of primary factors.
$SINVSH_{j,r}$	j∈IND r∈REG	The share of total investment in regional industry *j,r* attributable to investment by regional government *r*.

$SMMI_{i,na,r}$	i∈COM na∈NCOM r∈REG	Regional household *r*'s share of commodity *i* in its consumption of national accounts category *na*.
$SMMNA_{i,na,r}$	i∈COM na∈NCOM r∈REG	Regional household *r*'s share of national accounts commodity *na* in its consumption of commodity *i*.
$SOURCEDOM2_s$	s∈REG	Coefficient with the value 1 if *s*=1, or 0 if *s*= 2.
$SP4_{j,r}$	j∈IND r∈REG	Share of the Commonwealth income tax payable out of the gross rental price of a unit of capital in regional industry *j,r*.
$SP7_{j,r}$	j∈IND r∈REG	Share of the residential land tax payable out of the gross rental price of a unit of capital in regional industry *j,r*.
$SP8_{j,r}$	j∈IND r∈REG	Share of the commercial land tax payable out of the gross rental price of a unit of capital in regional industry *j,r*.
SUM_TFF		Total Commonwealth Government revenue from taxes, fees, fines.
$T\_CG_{j,r}$	j∈IND r∈REG	Share of national investment accounted for by investment in regional industry *j,r* by the Commonwealth Government.
$T\_PI_{j,r}$	j∈JSET r∈REG	Total private investment expenditure in private investment industry *j,r*.
$T\_SG_{j,r}$	j∈IND r∈REG	Share of national investment accounted for by investment in regional industry *j,r* by the regional government *r*.
$T\_SY_{j,r}$	j∈IND r∈REG	Share of national investment accounted for by investment in regional industry *j,r* by private investors.
$TARF_i$	i∈COM	Tariff factor: share of the ex-duty value in the landed duty paid value of good *i*.
$TAX\_K\_RATE_{j,r}$	j∈IND r∈REG	Rate of Commonwealth Government income tax on capital income in regional industry *j,r*.
$TAX1_{i,s,j,r,g}$	i∈COM s∈SOU j∈IND r∈REG g∈GOV	Indirect tax levied by government *g* on purchases of commodity *i* from source *s* by regional industry *j,r*.
$TAX2_{i,s,j,r,g}$	i∈COM s∈SOU j∈IND r∈REG g∈GOV	Indirect tax levied by government *g* on purchases of commodity *i* from source *s* by regional industry *j,r* for input to capital formation.
$TAX3_{i,s,r,g}$	i∈COM s∈SOU r∈REG g∈GOV	Indirect tax levied by government *g* on purchases of good *i* from source *s* by household *r*

$TAX4_{i,s,g}$	i∈COM s∈REG g∈GOV	Indirect tax levied by government *g* on exports of *i* from region *s*
$TAX1F_{i,s,j,r}$	i∈COM s∈REG j∈IND r∈REG	Phantom tax on commodity *i* from region *s* used by regional industry *j*,*r* for input to current production.
$TAX2F_{i,s,j,r}$	i∈COM s∈REG j∈IND r∈REG	Phantom tax on commodity *i* from source region *s* used by regional industry *j*,*r* for input to capital formation.
$TAX3F_{i,s,r}$	i∈COM s∈REG r∈REG	Phantom tax revenue on household *r*'s usage of commodity *i* from region *s* .
$TAX4F_{i,s}$	i∈COM s∈REG	Phantom tax revenue on exports of commodity *i* from region *s*.
$TAX5F_{i,s,r}$	i∈COM s∈REG r∈REG	Phantom tax revenue on regional government *r*'s purchases of commodity *i* from source *s* for current consumption purposes.
$TAX6F_{i,s}$	i∈COM s∈REG	Phantom tax revenue on the Commonwealth Government's purchases of commodity *i* from source *s* for current consumption purposes.
$TDOTHER_r$	r∈REG	Total regional government fees and fines paid by the residents of region *r*.
TINY		A very small number (0.000000000001) used to avoid zero divides.
$TOTCOST_{j,r}$	j∈JSET r∈REG	Total cost of regional industry *j*,*r*.
$TOT\_PHANT_{i,s}$	i∈COM s∈REG	Total phantom tax revenue collected on commodity *i* from source region *s*.
$TOT\_PHANT2_{i,r}$	i∈COM r∈REG	Total phantom taxes accruing *within* region *r*.
$TPAYE_r$	r∈REG	Total PAYE taxes paid by the residents of region *r*.
$U\_TOT_{j,r}$	j∈IND r∈REG	Total labour cost of regional industry *j*,*r*.
UE_RATE_r	r∈REG	Unemployment rate in region *r*.
$VINVEST_{j,r}$		Total investment in regional industry *j*,*r*.
$VCAP\_at\_T_{j,r}$	j∈IND r∈REG	Value of regional industry *j*,*r*'s capital stocks at the commencement of the simulation year.
W_3R_r	r∈REG	The share of consumption in region *r* in total national consumption.

$W\_3RIS_{i,s,r}$	i∈COM s∈SOU r∈REG	Share of the purchaser's value of commodity *i* from source *s* in the total consumption of region *r*.
$WP\_HOME_{m,j,r}$	m∈OCC j∈IND r∈REG	Share of the take-home-wage component in regional industry *j,r*'s cost of hiring occupation type *m*.
$WP\_PAYE_{m,j,r}$	m∈OCC j∈IND r∈REG	Share of PAYE tax in regional industry *j,r*'s cost of hiring occupation type *m*.
$WP\_ROLL_{m,j,r}$	m∈OCC j∈IND r∈REG	Share of payroll tax in regional industry *j,r*'s cost of hiring occupation type *m*.
$WPH\_SH_{m,j,r}$	m∈occ j∈IND r∈REG	Share of the take home wage of occupation *m* employed in regional industry *j,r* in the pre-PAYE (but post payroll) wage of the same.
$WPP\_SH_{m,j,r}$	m∈OCC j∈IND r∈REG	Share of the PAYE taxes paid by occupation *m* employed in regional industry *j,r* in the pre-PAYE (but post payroll) wage of the same.
X_DAMP_i	i∈COM	Dampening factor on output of *i* in historicals.
$XGROSS_r$	r∈REG	Gross (pre-tax) income of the residents of region *r*.
XIS_DAMP1_i	i∈COM	Damp on output of *i* related to deviation from *r_grpfc*.
XIS_DAMP2_i	i∈COM	Damp on output of *i* related to deviation from sectoral output.
$XUTE_r$	r∈REG	"X" Component of CPI minus X formula. Values like 0.5 through to 1.5
$ZIG1_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	CRESH parameter reflecting the degree of substitutability between the *s* sources of good *i* for use as an input to current production in regional industry *j,r*.
$ZIG2_{i,s,j,r}$	i∈COM s∈SOU j∈IND r∈REG	CRESH parameter reflecting the degree of substitutability between the *s* sources of good *i* for use as an input to capital formation in regional industry *j,r*.
$ZIG3_{i,s,r}$	i∈COM s∈SOU r∈REG	CRESH parameter reflecting the degree of substitutability between the *s* sources of good *i* for use as an input to household *r*'s consumption.
$ZIGOCC_{q,j,r}$	q∈OCC j∈IND r∈REG	CRESH parameter reflecting the degree of substitutability between labour of skill type *q* and other skill types in regional industry *j,r*.
$ZIGPRI_{v,j,r}$	v∈FAC j∈IND r∈REG	CRESH parameter reflecting the degree of substitutability between primary factors on the part of regional industry *j,r* in the formation of effective primary factor inputs.

APPENDIX D

DETAILED TABLES OF RESULTS FROM THE DECOMPOSITION SIMULATION

Table D.1

Impacts of Phantom Export Taxes

Table D.1: Impacts of Phantom Export Taxes

	Type of Tasmanian Export:				Type of Mainland Export:				Total
	Traditional (1)	Non-Traditional (2)	Exogenous (3)	Total (4)	Traditional (5)	Non-Traditional (6)	Exogenous (7)	Total (8)	(9)
Regional Macroeconomic Variables*									
1 Real GRP (at factor cost)	-0.69	-0.61	0.00	-1.30	-0.05	1.23	0.00	1.17	-0.13
2	0.01	0.00	0.00	0.01	-0.03	-0.64	0.00	-0.67	-0.66
3 Capital stock (rental weights)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Employment	-0.88	-0.72	0.00	-1.60	-0.08	1.61	0.00	1.53	-0.07
6	0.01	0.01	0.00	0.02	-0.01	-0.95	0.00	-0.96	-0.95
7 Real investment	-1.54	-0.93	0.00	-2.47	-0.20	1.87	0.00	1.67	-0.79
8	0.01	0.01	0.00	0.02	0.31	-1.65	0.00	-1.34	-1.32
9 Real household consumption	-0.56	-0.25	0.00	-0.81	0.05	0.36	0.00	0.41	-0.40
10	0.00	0.00	0.00	0.00	0.07	-0.52	0.00	-0.45	-0.45
11 Real exports	-4.80	-4.96	0.00	-9.76	-1.25	9.24	0.00	7.99	-1.77
12	0.07	0.05	0.00	0.13	-0.40	-3.37	0.00	-3.77	-3.64
13 Real regional government consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Real Commonwealth consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Foreign imports	-1.49	-0.84	0.00	-2.33	-0.13	1.08	0.00	0.95	-1.38
18	0.01	-0.01	0.00	0.00	0.02	-2.01	0.00	-1.99	-1.99
19 Interstate imports	-0.96	-0.78	0.00	-1.74	-0.11	1.67	0.00	1.56	-0.18
20	0.67	0.77	0.00	1.45	0.09	-0.81	0.00	-0.72	0.73
21 Interstate exports	0.67	0.77	0.00	1.45	0.09	-0.81	0.00	-0.72	0.73
22	-0.96	-0.78	0.00	-1.74	-0.11	1.67	0.00	1.56	-0.18
23 Investment price index	-0.11	-0.14	0.00	-0.25	-0.01	0.52	0.00	0.51	0.26
24	0.01	0.00	0.00	0.01	0.00	0.54	0.00	0.53	0.55

Table D.1: Impacts of Phantom Export Taxes (continued)

	Type of Tasmanian Export:				Type of Mainland Export:				Total
	Traditional (1)	Non-Traditional (2)	Exogenous (3)	Total (4)	Traditional (5)	Non-Traditional (6)	Exogenous (7)	Total (8)	(9)
25 Consumption price index	-0.37	-0.23	0.00	-0.61	-0.01	0.52	0.00	0.51	-0.10
26	0.01	0.01	0.00	0.01	0.00	-0.01	0.00	-0.01	0.00
27 Export price index	0.36	0.52	0.00	0.88	-0.01	1.57	0.00	1.55	2.44
28	0.01	0.01	0.00	0.02	-0.09	2.77	0.00	2.68	2.71
29 Regional government price index	-0.09	-0.06	0.00	-0.15	-0.01	0.09	0.00	0.08	-0.07
30	0.00	0.00	0.00	0.01	0.00	0.07	0.00	0.07	0.08
31 Commonwealth government price index	-0.09	-0.06	0.00	-0.14	-0.01	0.09	0.00	0.08	-0.06
32	0.00	0.00	0.00	0.01	0.00	0.07	0.00	0.07	0.08
33 Foreign import price index	0.02	0.01	0.00	0.04	-0.12	2.33	0.00	2.21	2.24
34	0.02	0.01	0.00	0.04	-0.12	2.32	0.00	2.20	2.23
35 Interstate import price index	0.01	0.00	0.00	0.01	0.07	-0.03	0.00	0.04	0.05
36	-0.31	-0.36	0.00	-0.67	-0.04	0.96	0.00	0.92	0.25
37 Interstate export price index	-0.31	-0.36	0.00	-0.67	-0.04	0.96	0.00	0.92	0.25
38	0.01	0.00	0.00	0.01	0.07	-0.03	0.00	0.04	0.05
39 Real pre tax wage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41 GSP Deflator	-0.26	-0.19	0.00	-0.45	-0.04	0.81	0.00	0.77	0.32
42	0.01	0.00	0.00	0.01	0.01	0.16	0.00	0.17	0.18

* *For each variable, the first row contains the Tasmanian results, and the second row contains the Mainland results.*

Table D.1: Impacts of Phantom Export Taxes (continued)

	Type of Tasmanian Export:				Type of Mainland Export:				Total
	Traditional (1)	Non-Traditional (2)	Exogenous (3)	Total (4)	Traditional (5)	Non-Traditional (6)	Exogenous (7)	Total (8)	(9)
National Macroeconomic Variables									
43 Real GDP	-0.01	-0.01	0.00	-0.02	0.00	-0.87	0.00	-0.86	-0.88
44 Real investment	-0.01	-0.01	0.00	-0.02	0.30	-1.58	0.00	-1.29	-1.31
45 Real consumption	-0.01	0.00	0.00	-0.01	0.07	-0.50	0.00	-0.43	-0.44
46 Real exports	-0.02	-0.04	0.00	-0.06	-0.41	-3.15	0.00	-3.56	-3.62
47 Real reg. gov. consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48 Real Com. Gov. consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49 Real imports	0.00	-0.01	0.00	-0.01	0.02	-1.99	0.00	-1.97	-1.99
50 Investment price index	0.01	0.00	0.00	0.01	0.00	0.54	0.00	0.53	0.54
51 Consumption price index	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52 Export price index	0.02	0.02	0.00	0.04	-0.09	2.75	0.00	2.66	2.70
53 Reg. gov. price index	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.07
54 Com. Gov. price index	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.07	0.08
55 Import price index	0.02	0.01	0.00	0.04	-0.12	2.32	0.00	2.20	2.23
56 GDP Deflator	0.00	0.00	0.00	0.00	0.01	0.17	0.00	0.18	0.18
57 Nominal exchange rate	0.02	0.01	0.00	0.03	-0.12	2.26	0.00	2.14	2.17
58 Real exchange rate (1)	-0.02	-0.01	0.00	-0.03	0.13	-2.15	0.00	-2.02	-2.05
59 Real exchange rate (2)	-0.01	0.00	0.00	-0.01	0.12	-0.82	0.00	-0.71	-0.72
60 BOT / GDP ratio	-0.01	0.00	0.00	-0.01	-0.08	-0.18	0.00	-0.26	-0.27
61 Terms of trade	0.00	0.00	0.00	0.00	0.05	0.38	0.00	0.43	0.43

Table D.1: Impacts of Phantom Export Taxes (continued)

	Type of Tasmanian Export:				Type of Mainland Export:				Total
	Traditional (1)	Non-Traditional (2)	Exogenous (3)	Total (4)	Traditional (5)	Non-Traditional (6)	Exogenous (7)	Total (8)	(9)
Tasmanian Sectoral Outputs									
62 1. Agriculture	-0.45	-1.25	0.00	-1.71	-0.19	2.30	0.00	2.12	0.41
63 2. Mining	-16.56	0.38	0.00	-16.18	-0.11	7.52	0.00	7.42	-8.76
64 3. Manufacturing	0.82	-1.66	0.00	-0.84	-0.12	2.05	0.00	1.93	1.09
65 4. Utilities	-0.66	-0.24	0.00	-0.90	-0.13	1.75	0.00	1.62	0.72
66 5. Construction	-1.13	-0.85	0.00	-1.98	-0.20	1.65	0.00	1.45	-0.53
67 6. Margin industries	-0.87	-0.40	0.00	-1.27	0.00	0.80	0.00	0.80	-0.47
68 7. Communications	-0.82	-0.42	0.00	-1.23	0.04	0.82	0.00	0.86	-0.37
69 8. Finance	-0.83	-0.54	0.00	-1.37	-0.03	1.07	0.00	1.04	-0.33
70 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71 10. Public administration	-0.01	-0.01	0.00	-0.02	0.00	0.02	0.00	0.02	0.00
72 11. Community services	-0.32	-0.16	0.00	-0.48	0.02	0.28	0.00	0.30	-0.18
73 12. Entertainment and recreation	-0.64	-0.37	0.00	-1.01	0.02	0.59	0.00	0.62	-0.40
Mainland Sectoral Outputs									
74 1. Agriculture	0.02	0.00	0.00	0.02	-0.71	2.01	0.00	1.30	1.32
75 2. Mining	0.02	0.01	0.00	0.04	0.18	2.81	0.00	2.99	3.02
76 3. Manufacturing	0.02	0.01	0.00	0.03	-0.16	-0.07	0.00	-0.23	-0.20
77 4. Utilities	0.00	0.00	0.00	0.01	0.01	-0.15	0.00	-0.14	-0.13
78 5. Construction	0.00	0.00	0.00	0.00	0.17	-1.55	0.00	-1.38	-1.38
79 6. Margin industries	0.02	0.01	0.00	0.03	-0.10	-1.65	0.00	-1.75	-1.73
80 7. Communications	0.00	0.01	0.00	0.01	-0.15	-2.08	0.00	-2.23	-2.22
81 8. Finance	0.00	0.00	0.00	0.00	-0.04	-1.00	0.00	-1.05	-1.05
82 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
83 10. Public administration	0.00	0.00	0.00	0.00	0.00	-0.28	0.00	-0.28	-0.28
84 11. Community services	0.00	0.00	0.00	0.00	0.02	-0.46	0.00	-0.44	-0.44
85 12. Entertainment and recreation	0.00	0.00	0.00	0.01	0.02	-1.37	0.00	-1.36	-1.35

Table D.1: Impacts of Phantom Export Taxes (continued)

	Type of Tasmanian Export:				Type of Mainland Export:				Total
	Traditional (1)	Non-Traditional (2)	Exogenous (3)	Total (4)	Traditional (5)	Non-Traditional (6)	Exogenous (7)	Total (8)	(9)
Tasmanian Sectoral Employments									
86 1. Agriculture	-0.74	-1.90	0.00	-2.64	-0.28	3.62	0.00	3.34	0.70
87 2. Mining	-17.68	0.42	0.00	-17.26	-0.19	8.21	0.00	8.02	-9.25
88 3. Manufacturing	1.28	-1.80	0.00	-0.52	-0.17	2.66	0.00	2.49	1.97
89 4. Utilities	-1.30	-0.49	0.00	-1.79	-0.33	3.75	0.00	3.42	1.63
90 5. Construction	-1.18	-0.92	0.00	-2.10	-0.24	1.79	0.00	1.55	-0.55
91 6. Margin industries	-1.16	-0.55	0.00	-1.71	-0.02	1.12	0.00	1.10	-0.60
92 7. Communications	-0.78	-0.40	0.00	-1.18	0.04	0.80	0.00	0.83	-0.35
93 8. Finance	-1.01	-0.68	0.00	-1.69	-0.05	1.35	0.00	1.30	-0.39
94 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95 10. Public administration	-0.01	-0.01	0.00	-0.02	0.00	0.02	0.00	0.02	0.00
96 11. Community services	-0.32	-0.16	0.00	-0.48	0.02	0.28	0.00	0.30	-0.19
97 12. Entertainment and recreation	-0.84	-0.51	0.00	-1.34	0.00	0.81	0.00	0.81	-0.53
Mainland Sectoral Employments									
98 1. Agriculture	0.03	0.01	0.00	0.04	-0.81	3.64	0.00	2.83	2.87
99 2. Mining	0.05	0.03	0.00	0.07	1.27	6.08	0.00	7.35	7.42
100 3. Manufacturing	0.02	0.02	0.00	0.03	-0.05	-0.06	0.00	-0.11	-0.08
101 4. Utilities	0.01	0.01	0.00	0.02	0.15	-0.35	0.00	-0.20	-0.18
102 5. Construction	0.00	0.00	0.00	0.00	0.20	-1.73	0.00	-1.54	-1.54
103 6. Margin industries	0.02	0.01	0.00	0.03	-0.13	-2.13	0.00	-2.26	-2.23
104 7. Communications	0.00	0.01	0.00	0.01	-0.34	-3.80	0.00	-4.13	-4.12
105 8. Finance	0.00	0.00	0.00	0.00	-0.06	-1.58	0.00	-1.64	-1.64
106 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107 10. Public administration	0.00	0.00	0.00	0.00	0.00	-0.28	0.00	-0.28	-0.28
108 11. Community services	0.00	0.00	0.00	0.00	0.02	-0.48	0.00	-0.46	-0.46
109 12. Entertainment and recreation	0.00	0.00	0.00	0.01	0.01	-1.85	0.00	-1.84	-1.83

Table D.1: Impacts of Phantom Export Taxes (continued)

	Type of Tasmanian Export:				Type of Mainland Export:				Total
	Traditional (1)	Non-Traditional (2)	Exogenous (3)	Total (4)	Traditional (5)	Non-Traditional (6)	Exogenous (7)	Total (8)	(9)
Tasmanian Sectoral Export Volumes									
110 1. Agriculture	-27.87	1.13	0.00	-26.75	-0.22	3.74	0.00	3.52	-23.23
111 2. Mining	-46.26	0.89	0.00	-45.37	-0.85	13.76	0.00	12.91	-32.46
112 3. Manufacturing	7.00	-7.07	0.00	-0.08	-1.51	9.33	0.00	7.82	7.75
113 4. Utilities	0.57	-23.81	0.00	-23.24	-0.72	13.22	0.00	12.50	-10.74
114 5. Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115 6. Margin industries	0.57	-23.81	0.00	-23.24	-0.72	13.22	0.00	12.50	-10.74
116 7. Communications	0.57	-23.81	0.00	-23.24	-0.72	13.22	0.00	12.50	-10.74
117 8. Finance	0.57	-23.81	0.00	-23.24	-0.72	13.22	0.00	12.50	-10.74
118 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
119 10. Public administration	0.57	-23.81	0.00	-23.24	-0.72	13.22	0.00	12.50	-10.74
120 11. Community services	0.57	-23.81	0.00	-23.24	-0.72	13.22	0.00	12.50	-10.74
121 12. Entertainment and recreation	0.57	-23.81	0.00	-23.24	-0.72	13.22	0.00	12.50	-10.74
Mainland Sectoral Export Volumes									
122 1. Agriculture	0.00	0.03	0.00	0.03	-2.53	4.60	0.00	2.08	2.11
123 2. Mining	0.02	0.02	0.00	0.04	0.26	3.99	0.00	4.25	4.28
124 3. Manufacturing	0.10	0.07	0.00	0.17	-0.51	-2.51	0.00	-3.02	-2.85
125 4. Utilities	0.10	0.08	0.00	0.18	-1.29	-14.15	0.00	-15.44	-15.26
126 5. Construction	0.10	0.07	0.00	0.18	-1.29	-14.14	0.00	-15.44	-15.26
127 6. Margin industries	0.10	0.08	0.00	0.18	-1.29	-14.15	0.00	-15.44	-15.26
128 7. Communications	0.10	0.08	0.00	0.18	-1.29	-14.15	0.00	-15.44	-15.26
129 8. Finance	0.10	0.08	0.00	0.18	-1.29	-14.15	0.00	-15.44	-15.26
130 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
131 10. Public administration	0.10	0.08	0.00	0.18	-1.29	-14.15	0.00	-15.44	-15.26
132 11. Community services	0.10	0.08	0.00	0.18	-1.29	-14.15	0.00	-15.44	-15.26
133 12. Entertainment and recreation	0.10	0.08	0.00	0.18	-1.29	-14.15	0.00	-15.44	-15.26

Table D.1: Impacts of Phantom Export Taxes (continued)

	Type of Tasmanian Export:				Type of Mainland Export:				Total
	Traditional (1)	Non-Traditional (2)	Exogenous (3)	Total (4)	Traditional (5)	Non-Traditional (6)	Exogenous (7)	Total (8)	(9)
Tasmanian Sectoral Basic Prices									
134 1. Agriculture	-0.68	-0.41	0.00	-1.09	-0.12	1.58	0.00	1.46	0.37
135 2. Mining	-1.63	-0.04	0.00	-1.68	-0.05	1.34	0.00	1.28	-0.39
136 3. Manufacturing	-0.16	-0.39	0.00	-0.55	-0.02	1.06	0.00	1.04	0.49
137 4. Utilities	-0.30	-0.31	0.00	-0.61	-0.28	2.22	0.00	1.94	1.34
138 5. Construction	-0.18	-0.17	0.00	-0.35	-0.03	0.39	0.00	0.37	0.01
139 6. Margin industries	-0.41	-0.25	0.00	-0.66	-0.05	0.51	0.00	0.46	-0.19
140 7. Communications	-0.04	-0.02	0.00	-0.06	-0.01	-0.10	0.00	-0.11	-0.17
141 8. Finance	-0.26	-0.19	0.00	-0.44	-0.03	0.29	0.00	0.26	-0.18
142 9. Dwellings	-1.43	-0.68	0.00	-2.11	0.06	1.11	0.00	1.17	-0.94
143 10. Public administration	-0.07	-0.04	0.00	-0.11	-0.01	0.06	0.00	0.06	-0.06
144 11. Community services	-0.06	-0.04	0.00	-0.10	0.00	0.02	0.00	0.02	-0.07
145 12. Entertainment and recreation	-0.31	-0.21	0.00	-0.51	-0.03	0.34	0.00	0.31	-0.20
Mainland Sectoral Basic Prices									
146 1. Agriculture	0.02	0.01	0.00	0.03	-0.13	2.34	0.00	2.22	2.25
147 2. Mining	0.02	0.01	0.00	0.03	1.16	2.66	0.00	3.82	3.85
148 3. Manufacturing	0.01	0.01	0.00	0.02	0.05	0.67	0.00	0.73	0.74
149 4. Utilities	0.01	0.01	0.00	0.02	0.45	0.33	0.00	0.78	0.80
150 5. Construction	0.00	0.00	0.00	0.01	0.04	0.04	0.00	0.08	0.09
151 6. Margin industries	0.01	0.01	0.00	0.01	-0.04	-0.54	0.00	-0.58	-0.57
152 7. Communications	0.01	0.01	0.00	0.01	-0.18	-1.38	0.00	-1.56	-1.54
153 8. Finance	0.00	0.00	0.00	0.00	-0.02	-0.70	0.00	-0.73	-0.72
154 9. Dwellings	0.01	0.01	0.00	0.02	0.13	-1.04	0.00	-0.91	-0.89
155 10. Public administration	0.00	0.00	0.00	0.01	0.00	0.12	0.00	0.12	0.13
156 11. Community services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
157 12. Entertainment and recreation	0.01	0.00	0.00	0.01	-0.01	-0.20	0.00	-0.22	-0.21

Table D2

Phantom Taxes upon Domestic Usages

Table D2: Phantom Taxes upon Domestic Usages

Variable	Inputs to capital formation				Household purchases				Regional government purchases				Commonwealth purchases		Total
	Within Tasmania		Within Mainland		Within Tasmania		Within Mainland		Within Tasmania		Within Mainland				
	Tas. sourced (1)	Main. sourced (2)	Tas. sourced (3)	Main. sourced (4)	Tas. sourced (5)	Main. sourced (6)	Tas. sourced (7)	Main. sourced (8)	Tas. sourced (9)	Main. sourced (10)	Tas. sourced (11)	Main. sourced (12)	Tas. sourced (13)	Main. sourced (14)	(15)
Regional Macroeconomic Variables															
1 Real GRP (at factor cost)	-0.02	0.04	0.00	-0.03	-0.07	0.02	0.02	-0.16	-0.02	0.00	0.00	-0.01	-0.01	0.00	-0.24
2	0.00	0.00	0.00	0.11	-0.01	0.00	0.00	-0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.04
3 Capital stock (rental weights)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Employment	-0.03	0.05	0.00	-0.05	-0.08	0.02	0.02	-0.21	-0.03	0.00	0.00	-0.01	-0.01	-0.01	-0.33
6	0.00	0.00	0.00	0.16	-0.01	0.00	0.00	-0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.05
7 Real investment	0.70	0.52	0.00	-0.35	-0.09	0.02	0.05	-0.45	-0.13	0.00	0.00	-0.05	-0.04	-0.03	0.14
8	0.00	0.00	0.00	0.75	-0.01	0.00	0.00	-0.16	0.00	0.00	0.00	-0.02	0.00	-0.01	0.56
9 Real household consumption	-0.25	0.01	0.00	-0.29	-0.06	0.06	0.00	-0.23	-0.03	0.00	0.00	-0.02	-0.01	-0.01	-0.84
10	0.00	0.00	0.00	-0.25	0.00	0.00	0.00	-0.03	0.00	0.00	0.00	-0.02	0.00	-0.01	-0.31
11 Real exports	0.05	-0.02	-0.01	0.72	-0.04	0.01	-0.16	-0.02	0.04	0.00	0.00	0.03	0.01	0.02	0.63
12	0.02	0.01	0.00	0.63	-0.03	0.01	0.00	-0.11	0.01	0.00	0.00	0.07	0.00	0.04	0.66
13 Real reg govt consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Real Com consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Foreign imports	0.00	-0.07	0.01	0.12	0.00	-0.18	0.19	-0.11	-0.01	0.00	0.00	-0.01	0.00	0.00	-0.06
18	0.00	0.00	0.00	0.10	-0.01	0.00	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.07
19 Interstate imports	0.00	0.16	0.00	-0.17	0.03	0.12	0.02	-0.28	-0.04	0.00	0.00	-0.02	-0.01	-0.01	-0.20
20	0.00	0.00	0.04	0.13	-0.02	0.00	0.19	-0.21	0.00	0.00	0.00	0.01	0.00	0.00	0.15
21 Interstate exports	0.00	0.00	0.04	0.13	-0.02	0.00	0.19	-0.21	0.00	0.00	0.00	0.01	0.00	0.00	0.15
22	0.00	0.16	0.00	-0.17	0.03	0.12	0.02	-0.28	-0.04	0.00	0.00	-0.02	-0.01	-0.01	-0.20

Table D2: Phantom Taxes upon Domestic Usages (continued)

Variable	Inputs to capital formation				Household purchases				Regional government purchases				Commonwealth purchases		Total
	Within Tasmania		Within Mainland		Within Tasmania		Within Mainland		Within Tasmania		Within Mainland				
	Tas. sourced (1)	Main. sourced (2)	Tas. sourced (3)	Main. sourced (4)	Tas. sourced (5)	Main. sourced (6)	Tas. sourced (7)	Main. sourced (8)	Tas. sourced (9)	Main. sourced (10)	Tas. sourced (11)	Main. sourced (12)	Tas. sourced (13)	Main. sourced (14)	(15)
23 Investment price index	-1.54	-0.53	0.00	0.05	0.00	0.00	0.01	-0.08	-0.02	0.00	0.00	-0.01	-0.01	0.00	-2.11
24	0.00	0.00	0.00	-0.95	-0.01	0.00	0.00	-0.04	0.00	0.00	0.00	0.00	0.00	0.00	-0.99
25 Consumption price index	-0.14	0.01	0.00	-0.11	0.38	-0.05	0.00	-0.18	-0.03	0.00	0.00	-0.01	-0.01	0.00	-0.14
26	0.00	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27 Export price index	0.00	0.00	0.00	0.14	-0.01	0.00	0.01	-0.09	0.00	0.00	0.00	0.01	0.00	0.01	0.08
28	0.01	0.00	0.00	0.14	-0.01	0.00	0.00	-0.09	0.00	0.00	0.00	0.02	0.00	0.01	0.09
29 Regional govt price index	-0.02	0.00	0.00	0.01	0.00	0.00	0.00	-0.03	-0.22	0.00	0.00	0.00	0.00	0.00	-0.25
30	0.00	0.00	0.00	0.04	0.00	0.00	0.00	-0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.03
31 Com govt price index	-0.02	0.00	0.00	0.01	0.00	0.00	0.00	-0.03	-0.01	0.00	0.00	0.00	-0.21	0.00	-0.25
32	0.00	0.00	0.00	0.04	0.00	0.00	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.03
33 Foreign import price index	0.01	0.00	0.00	0.20	-0.01	0.00	0.00	-0.09	0.00	0.00	0.00	0.02	0.00	0.01	0.15
34	0.01	0.00	0.00	0.20	-0.01	0.00	0.00	-0.09	0.00	0.00	0.00	0.02	0.00	0.01	0.15
35 Interstate import price index	0.00	0.00	0.00	0.10	-0.01	0.00	0.00	-0.03	0.00	0.00	0.00	0.01	0.00	0.01	0.09
36	0.00	0.01	0.00	0.10	-0.02	0.00	0.09	-0.06	0.00	0.00	0.00	0.01	0.00	0.01	0.14
37 Interstate export price index	0.00	0.01	0.00	0.10	-0.02	0.00	0.09	-0.06	0.00	0.00	0.00	0.01	0.00	0.01	0.14
38	0.00	0.00	0.00	0.10	-0.01	0.00	0.00	-0.03	0.00	0.00	0.00	0.01	0.00	0.01	0.09
39 Real pre tax wage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41 GSP Deflator	-0.39	-0.09	0.00	-0.08	0.26	-0.03	0.02	-0.15	-0.06	0.00	0.00	-0.01	-0.02	0.00	-0.54
42	0.00	0.00	0.00	-0.21	-0.01	0.00	0.00	-0.01	0.00	0.00	0.00	-0.01	0.00	0.00	-0.23

** For each variable, the first row contains the Tasmanian results, and the second row contains the Mainland results.*

Table D2: Phantom Taxes upon Domestic Usages (continued)

Variable	Inputs to capital formation				Household purchases				Regional government purchases				Commonwealth purchases		Total
	Within Tasmania		Within Mainland		Within Tasmania		Within Mainland		Within Tasmania		Within Mainland				
	Tas. sourced (1)	Main. sourced (2)	Tas. sourced (3)	Main. sourced (4)	Tas. sourced (5)	Main. sourced (6)	Tas. sourced (7)	Main. sourced (8)	Tas. sourced (9)	Main. sourced (10)	Tas. sourced (11)	Main. sourced (12)	Tas. sourced (13)	Main. sourced (14)	(15)
National Macroeconomic Variables															
43 Real GDP (at market prices)	0.00	0.00	0.00	0.10	-0.01	0.00	0.00	-0.07	0.00	0.00	0.00	-0.01	0.00	-0.01	0.01
44 Real investment	0.02	0.01	0.00	0.73	-0.01	0.00	0.00	-0.16	0.00	0.00	0.00	-0.02	0.00	-0.01	0.55
45 Real consumption	-0.01	0.00	0.00	-0.25	0.00	0.00	0.00	-0.03	0.00	0.00	0.00	-0.02	0.00	-0.01	-0.33
46 Real exports	0.02	0.00	0.00	0.63	-0.03	0.01	0.00	-0.11	0.01	0.00	0.00	0.07	0.00	0.04	0.66
47 Real reg. gov. consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48 Real Com. Gov. consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49 Real imports	0.00	0.00	0.00	0.10	-0.01	0.00	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.07
50 Investment price index	-0.02	-0.01	0.00	-0.93	-0.01	0.00	0.00	-0.05	0.00	0.00	0.00	0.00	0.00	0.00	-1.01
51 Consumption price index	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52 Export price index	0.01	0.00	0.00	0.14	-0.01	0.00	0.00	-0.09	0.00	0.00	0.00	0.02	0.00	0.01	0.09
53 Reg. gov. price index	0.00	0.00	0.00	0.04	0.00	0.00	0.00	-0.02	-0.01	0.00	0.00	0.01	0.00	0.00	0.02
54 Com. Gov. price index	0.00	0.00	0.00	0.04	0.00	0.00	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.03
55 Import price index	0.01	0.00	0.00	0.20	-0.01	0.00	0.00	-0.09	0.00	0.00	0.00	0.02	0.00	0.01	0.15
56 GDP Deflator	-0.01	0.00	0.00	-0.21	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	-0.01	0.00	0.00	-0.23
57 Nominal exchange rate	0.01	0.00	0.00	0.20	-0.01	0.00	0.00	-0.09	0.00	0.00	0.00	0.02	0.00	0.01	0.15
58 Real exchange rate (1)	-0.01	0.00	0.00	-0.41	0.01	0.00	0.00	0.08	0.00	0.00	0.00	-0.03	0.00	-0.02	-0.38
59 Real exchange rate (2)	0.00	0.00	0.00	-0.07	0.00	0.00	0.00	0.04	0.00	0.00	0.00	-0.01	0.00	-0.01	-0.05
60 BOT / GDP ratio	0.00	0.00	0.00	0.09	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.08
61 Terms of trade	0.00	0.00	0.00	-0.06	0.00	0.00	0.00	0.01	0.00	0.00	0.00	-0.01	0.00	0.00	-0.06

Table D2: Phantom Taxes upon Domestic Usages (continued)

Variable	Inputs to capital formation				Household purchases				Regional government purchases				Commonwealth purchases		Total
	Within Tasmania		Within Mainland		Within Tasmania		Within Mainland		Within Tasmania		Within Mainland				
	Tas. sourced (1)	Main. sourced (2)	Tas. sourced (3)	Main. sourced (4)	Tas. sourced (5)	Main. sourced (6)	Tas. sourced (7)	Main. sourced (8)	Tas. sourced (9)	Main. sourced (10)	Tas. sourced (11)	Main. sourced (12)	Tas. sourced (13)	Main. sourced (14)	(15)
Tasmanian Sectoral Outputs															
62 1. Agriculture	0.02	0.01	0.00	0.22	-0.05	0.01	-0.10	-0.06	0.00	0.00	0.00	0.01	0.00	0.01	0.07
63 2. Mining	0.12	0.00	0.00	0.76	-0.12	0.01	-0.01	-0.09	0.01	0.00	0.00	0.01	0.00	0.01	0.70
64 3. Manufacturing	0.08	0.00	0.02	0.20	-0.09	0.02	0.12	-0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.17
65 4. Utilities	-0.02	0.01	0.00	0.10	-0.05	0.00	0.00	-0.09	-0.01	0.00	0.00	-0.01	0.00	0.00	-0.07
66 5. Construction	0.65	0.44	0.00	-0.29	-0.09	0.02	0.05	-0.39	-0.11	0.00	0.00	-0.04	-0.04	-0.02	0.16
67 6. Margin industries	-0.16	0.03	0.00	-0.19	-0.28	0.03	0.00	-0.21	-0.03	0.00	0.00	-0.02	-0.01	-0.01	-0.85
68 7. Communications	-0.29	0.02	0.00	-0.36	-0.27	0.02	0.00	-0.30	-0.04	0.00	0.00	-0.03	-0.01	-0.01	-1.28
69 8. Finance	-0.12	0.04	0.00	-0.14	0.21	0.14	-0.01	-0.20	-0.03	0.00	0.00	-0.02	-0.01	-0.01	-0.15
70 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71 10. Public administration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
72 11. Community services	-0.14	0.01	0.00	-0.15	0.03	0.00	0.00	-0.13	-0.02	0.00	0.00	-0.01	-0.01	-0.01	-0.43
73 12. Entertainment and rec.	-0.25	0.02	0.00	-0.30	-0.12	-0.15	0.00	-0.29	-0.04	0.00	0.00	-0.03	-0.01	-0.01	-1.17
Mainland Sectoral Outputs															
74 1. Agriculture	0.01	0.00	0.00	0.14	-0.01	0.00	0.00	-0.11	0.00	0.00	0.00	0.02	0.00	0.01	0.06
75 2. Mining	0.01	0.00	0.00	0.16	-0.01	0.00	0.00	-0.06	0.00	0.00	0.00	-0.01	0.00	-0.01	0.08
76 3. Manufacturing	0.01	0.00	0.00	0.30	-0.01	0.00	0.00	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.39
77 4. Utilities	0.00	0.00	0.00	0.07	-0.01	0.00	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.05
78 5. Construction	0.01	0.00	0.00	0.61	-0.01	0.00	0.00	-0.16	0.00	0.00	0.00	-0.02	0.00	-0.01	0.41
79 6. Margin industries	0.00	0.00	0.00	0.11	-0.01	0.00	0.00	-0.17	0.00	0.00	0.00	0.00	0.00	0.00	-0.07
80 7. Communications	0.00	0.00	0.00	0.10	-0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.01	0.00	0.01	0.13
81 8. Finance	0.00	0.00	0.00	0.03	-0.01	0.00	0.00	0.11	0.00	0.00	0.00	-0.01	0.00	0.00	0.13
82 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
83 10. Public administration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
84 11. Community services	0.00	0.00	0.00	-0.10	0.00	0.00	0.00	-0.26	0.00	0.00	0.00	-0.01	0.00	0.00	-0.38
85 12. Entertainment and rec.	0.00	0.00	0.00	-0.13	-0.01	0.00	0.00	0.29	0.00	0.00	0.00	-0.01	0.00	-0.01	0.12

Table D2: Phantom Taxes upon Domestic Usages (continued)

Variable	Inputs to capital formation				Household purchases				Regional government purchases				Commonwealth purchases		Total
	Within Tasmania		Within Mainland		Within Tasmania		Within Mainland		Within Tasmania		Within Mainland				
	Tas. sourced (1)	Main. sourced (2)	Tas. sourced (3)	Main. sourced (4)	Tas. sourced (5)	Main. sourced (6)	Tas. sourced (7)	Main. sourced (8)	Tas. sourced (9)	Main. sourced (10)	Tas. sourced (11)	Main. sourced (12)	Tas. sourced (13)	Main. sourced (14)	(15)
Tasmanian Sectoral Employments															
86 1. Agriculture	0.03	0.01	0.00	0.34	-0.09	0.01	-0.16	-0.08	0.01	0.00	0.00	0.01	0.00	0.01	0.08
87 2. Mining	0.14	0.00	0.00	0.87	-0.13	0.01	-0.01	-0.13	0.02	0.00	0.00	0.07	0.01	0.04	0.89
88 3. Manufacturing	0.09	0.00	0.02	0.25	-0.12	0.03	0.15	-0.21	0.00	0.00	0.00	-0.01	0.00	0.00	0.20
89 4. Utilities	-0.02	0.01	0.00	0.24	-0.11	0.00	0.00	-0.20	-0.01	0.00	0.00	-0.01	0.00	0.00	-0.11
90 5. Construction	0.70	0.49	0.00	-0.32	-0.10	0.02	0.05	-0.44	-0.13	0.00	0.00	-0.05	-0.04	-0.02	0.15
91 6. Margin industries	-0.22	0.04	0.00	-0.26	-0.45	0.04	-0.01	-0.30	-0.05	0.00	0.00	-0.03	-0.01	-0.01	-1.26
92 7. Communications	-0.28	0.02	0.00	-0.34	-0.26	0.01	0.00	-0.29	-0.04	0.00	0.00	-0.02	-0.01	-0.01	-1.23
93 8. Finance	-0.15	0.05	0.00	-0.18	0.27	0.18	-0.01	-0.26	-0.04	0.00	0.00	-0.02	-0.01	-0.01	-0.19
94 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95 10. Public administration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01
96 11. Community services	-0.14	0.01	0.00	-0.16	0.03	0.00	0.00	-0.13	-0.02	0.00	0.00	-0.01	-0.01	-0.01	-0.44
97 12. Entertainment and rec.	-0.35	0.03	0.00	-0.40	-0.18	-0.20	0.01	-0.40	-0.07	0.00	0.00	-0.04	-0.02	-0.02	-1.65
Mainland Sectoral Employments															
98 1. Agriculture	0.01	0.00	0.00	0.26	-0.02	0.00	0.00	-0.20	0.00	0.00	0.00	0.03	0.00	0.02	0.12
99 2. Mining	0.01	0.00	0.00	0.35	-0.02	0.00	0.00	-0.16	0.00	0.00	0.00	0.01	0.00	0.01	0.21
100 3. Manufacturing	0.01	0.00	0.00	0.36	-0.02	0.01	0.00	0.08	0.00	0.00	0.00	0.01	0.00	0.01	0.46
101 4. Utilities	0.01	0.00	0.00	0.18	-0.02	0.00	0.00	-0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.12
102 5. Construction	0.01	0.00	0.00	0.70	-0.01	0.00	0.00	-0.17	0.00	0.00	0.00	-0.03	0.00	-0.02	0.48
103 6. Margin industries	0.01	0.00	0.00	0.15	-0.01	0.00	0.00	-0.22	0.00	0.00	0.00	0.00	0.00	0.00	-0.08
104 7. Communications	0.01	0.00	0.00	0.18	-0.02	0.01	0.00	0.05	0.00	0.00	0.00	0.03	0.00	0.02	0.27
105 8. Finance	0.00	0.00	0.00	0.05	-0.01	0.00	0.00	0.20	0.00	0.00	0.00	-0.01	0.00	-0.01	0.22
106 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107 10. Public administration	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
108 11. Community services	0.00	0.00	0.00	-0.10	0.00	0.00	0.00	-0.27	0.00	0.00	0.00	-0.01	0.00	-0.01	-0.40
109 12. Entertainment and rec.	0.00	0.00	0.00	-0.18	-0.01	0.00	0.00	0.37	0.00	0.00	0.00	-0.03	0.00	-0.01	0.14

Table D2: Phantom Taxes upon Domestic Usages (continued)

Variable	Inputs to capital formation				Household purchases				Regional government purchases				Commonwealth purchases		Total
	Within Tasmania		Within Mainland		Within Tasmania		Within Mainland		Within Tasmania		Within Mainland				
	Tas. sourced (1)	Main. sourced (2)	Tas. sourced (3)	Main. sourced (4)	Tas. sourced (5)	Main. sourced (6)	Tas. sourced (7)	Main. sourced (8)	Tas. sourced (9)	Main. sourced (10)	Tas. sourced (11)	Main. sourced (12)	Tas. sourced (13)	Main. sourced (14)	(15)
Tasmanian Sectoral Exports															
110 1. Agriculture	0.10	-0.01	0.00	0.42	0.13	-0.03	0.42	-0.12	0.03	0.00	0.00	0.10	0.01	0.05	1.10
111 2. Mining	0.11	-0.05	0.00	1.23	-0.21	0.00	0.01	-0.03	0.00	0.00	0.00	-0.11	0.00	-0.04	0.91
112 3. Manufacturing	0.03	-0.02	-0.02	0.68	-0.05	0.01	-0.28	0.00	0.04	0.00	0.00	0.05	0.01	0.03	0.50
113 4. Utilities	-0.11	-0.02	-0.05	0.73	-0.08	0.04	-0.86	0.19	0.05	0.00	0.00	-0.10	0.02	-0.04	-0.23
114 5. Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115 6. Margin industries	-0.11	-0.02	-0.05	0.73	-0.08	0.04	-0.86	0.19	0.05	0.00	0.00	-0.10	0.02	-0.04	-0.23
116 7. Communications	-0.11	-0.02	-0.05	0.73	-0.08	0.04	-0.86	0.19	0.05	0.00	0.00	-0.10	0.02	-0.04	-0.23
117 8. Finance	-0.11	-0.02	-0.05	0.73	-0.08	0.04	-0.86	0.19	0.05	0.00	0.00	-0.10	0.02	-0.04	-0.23
118 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
119 10. Public administration	-0.11	-0.02	-0.05	0.73	-0.08	0.04	-0.86	0.19	0.05	0.00	0.00	-0.10	0.02	-0.04	-0.23
120 11. Community services	-0.11	-0.02	-0.05	0.73	-0.08	0.04	-0.86	0.19	0.05	0.00	0.00	-0.10	0.02	-0.04	-0.23
121 12. Entertainment and rec.	-0.11	-0.02	-0.05	0.73	-0.08	0.04	-0.86	0.19	0.05	0.00	0.00	-0.10	0.02	-0.04	-0.23
Mainland Sectoral Exports															
122 1. Agriculture	0.01	0.00	0.00	0.27	-0.01	0.01	-0.01	0.30	0.00	0.00	0.00	0.03	0.00	0.02	0.62
123 2. Mining	0.00	0.00	0.00	0.13	-0.01	0.00	0.00	-0.05	0.00	0.00	0.00	-0.03	0.00	-0.01	0.03
124 3. Manufacturing	0.03	0.01	0.00	0.84	-0.04	0.01	0.00	-0.24	0.01	0.00	0.00	0.16	0.00	0.08	0.87
125 4. Utilities	0.03	0.01	0.00	0.95	-0.04	0.02	0.00	-0.14	0.02	0.00	0.00	0.22	0.01	0.11	1.19
126 5. Construction	0.03	0.01	0.00	0.95	-0.04	0.02	0.00	-0.14	0.02	0.00	0.00	0.22	0.01	0.11	1.19
127 6. Margin industries	0.03	0.01	0.00	0.95	-0.04	0.02	0.00	-0.14	0.02	0.00	0.00	0.22	0.01	0.11	1.19
128 7. Communications	0.03	0.01	0.00	0.95	-0.04	0.02	0.00	-0.14	0.02	0.00	0.00	0.22	0.01	0.11	1.19
129 8. Finance	0.03	0.01	0.00	0.95	-0.04	0.02	0.00	-0.14	0.02	0.00	0.00	0.22	0.01	0.11	1.19
130 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
131 10. Public administration	0.03	0.01	0.00	0.95	-0.04	0.02	0.00	-0.14	0.02	0.00	0.00	0.22	0.01	0.11	1.19
132 11. Community services	0.03	0.01	0.00	0.95	-0.04	0.02	0.00	-0.14	0.02	0.00	0.00	0.22	0.01	0.11	1.19
133 12. Entertainment and rec.	0.03	0.01	0.00	0.95	-0.04	0.02	0.00	-0.14	0.02	0.00	0.00	0.22	0.01	0.11	1.19

Table D2: Phantom Taxes upon Domestic Usages (continued)

Variable	Inputs to capital formation				Household purchases				Regional government purchases				Commonwealth purchases		Total
	Within Tasmania		Within Mainland		Within Tasmania		Within Mainland		Within Tasmania		Within Mainland				
	Tas. sourced	Main. sourced	Tas. sourced	Main. sourced	Tas. sourced	Main. sourced	Tas. sourced	Main. sourced	Tas. sourced	Main. sourced	Tas. sourced	Main. sourced	Tas. sourced	Main. sourced	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Tasmanian Sectoral Basic Prices															
134 1. Agriculture	-0.01	0.01	0.00	0.13	-0.03	0.01	-0.06	-0.07	0.00	0.00	0.00	0.01	0.00	0.01	-0.01
135 2. Mining	0.00	0.01	0.00	0.12	0.00	0.00	0.00	-0.09	0.00	0.00	0.00	0.03	0.00	0.02	0.09
136 3. Manufacturing	0.00	0.01	0.00	0.10	-0.03	0.01	0.06	-0.07	0.00	0.00	0.00	0.01	0.00	0.00	0.08
137 4. Utilities	-0.03	0.01	0.00	0.14	0.02	0.01	-0.01	-0.17	-0.01	0.00	0.00	0.03	0.00	0.01	0.01
138 5. Construction	0.04	0.06	0.00	-0.01	0.00	0.00	0.01	-0.09	-0.03	0.00	0.00	0.00	-0.01	0.00	-0.04
139 6. Margin industries	-0.08	0.02	0.00	-0.07	-0.16	0.01	0.00	-0.14	-0.03	0.00	0.00	-0.01	-0.01	0.00	-0.47
140 7. Communications	0.00	0.00	0.00	0.05	-0.01	0.00	0.00	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.01
141 8. Finance	-0.06	0.01	0.00	-0.04	0.10	0.03	0.00	-0.09	-0.02	0.00	0.00	0.00	-0.01	0.00	-0.08
142 9. Dwellings	-0.62	0.04	-0.01	-0.68	0.21	-0.02	0.00	-0.62	-0.11	0.00	0.00	-0.06	-0.03	-0.03	-1.92
143 10. Public administration	-0.02	0.00	0.00	0.01	0.00	0.00	0.00	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	-0.04
144 11. Community services	-0.01	0.00	0.00	0.01	0.00	0.00	0.00	-0.02	0.00	0.00	0.00	0.00	0.00	0.00	-0.03
145 12. Entertainment and rec.	-0.14	0.02	0.00	-0.13	-0.05	-0.07	0.00	-0.17	-0.04	0.00	0.00	-0.02	-0.01	-0.01	-0.62
Mainland Sectoral Basic Prices															
146 1. Agriculture	0.01	0.00	0.00	0.19	-0.01	0.00	0.00	-0.13	0.00	0.00	0.00	0.03	0.00	0.02	0.10
147 2. Mining	0.01	0.00	0.00	0.20	-0.01	0.00	0.00	-0.10	0.00	0.00	0.00	0.04	0.00	0.02	0.16
148 3. Manufacturing	0.00	0.00	0.00	0.13	-0.01	0.00	0.00	-0.06	0.00	0.00	0.00	0.01	0.00	0.01	0.10
149 4. Utilities	0.01	0.00	0.00	0.15	-0.01	0.00	0.00	-0.06	0.00	0.00	0.00	0.02	0.00	0.01	0.12
150 5. Construction	0.00	0.00	0.00	0.13	-0.01	0.00	0.00	-0.05	0.00	0.00	0.00	-0.01	0.00	0.00	0.08
151 6. Margin industries	0.00	0.00	0.00	0.08	-0.01	0.00	0.00	-0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.02
152 7. Communications	0.00	0.00	0.00	0.13	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.01	0.17
153 8. Finance	0.00	0.00	0.00	0.05	-0.01	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.13
154 9. Dwellings	0.00	0.00	0.00	-0.47	-0.01	0.00	0.00	-0.29	0.00	0.00	0.00	-0.05	0.00	-0.03	-0.86
155 10. Public administration	0.00	0.00	0.00	0.06	0.00	0.00	0.00	-0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.05
156 11. Community services	0.00	0.00	0.00	0.02	0.00	0.00	0.00	-0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
157 12. Entertainment and rec.	0.00	0.00	0.00	0.02	-0.01	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.06

Table D.3

Technical Change

Table D.3: Technical Change

Variable	Primary factor technical change		All-input using technical change		Technical change in capital creation		Commodity-using technical change		Total
	Tasmania (1)	Mainland (2)	Tasmania (3)	Mainland (4)	Tasmania (5)	Mainland (6)	Tasmania (7)	Australia-wide (8)	(9)
Regional Macroeconomic Variables									
1 Real GRP (at factor cost)	2.33	1.41	-0.88	0.29	0.10	-0.02	-0.13	0.09	3.19
2	0.01	3.76	0.01	-0.28	0.00	0.03	0.01	-0.01	3.53
3 Capital stock (rental weights)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Employment	0.79	1.85	-1.22	0.37	0.13	-0.03	-0.15	0.12	1.87
6	0.02	1.71	0.01	-0.42	0.00	0.04	0.01	-0.02	1.35
7 Real investment	2.48	3.68	-2.38	0.05	0.24	-0.03	0.19	0.64	4.87
8	0.03	5.04	0.01	-1.08	0.00	-0.24	0.01	0.68	4.45
9 Real household consumption	0.70	1.56	-0.35	-0.09	0.03	-0.02	0.27	-0.22	1.89
10	0.02	1.95	-0.01	-0.37	0.00	0.01	0.00	-0.15	1.44
11 Real exports	13.14	2.26	-4.79	1.69	-0.09	-0.06	-0.64	3.21	14.72
12	-0.06	12.06	0.09	-0.22	-0.01	-0.11	0.02	-2.48	9.28
13 Real regional government consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Real Commonwealth consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Foreign imports	4.03	1.94	-2.05	1.07	0.24	0.04	-0.05	-1.71	3.51
18	0.02	4.22	0.01	0.16	0.00	0.23	0.00	-1.44	3.20
19 Interstate imports	2.46	2.40	-1.20	0.04	0.27	-0.04	-0.04	0.41	4.30
20	2.03	2.03	-1.25	0.44	-0.02	-0.01	-0.04	-1.24	1.94
21 Interstate exports	2.02	2.03	-1.25	0.44	-0.02	-0.01	-0.04	-1.24	1.94
22	2.46	2.40	-1.20	0.04	0.27	-0.04	-0.04	0.41	4.30

Table D.3: Technical Change (continued)

Variable	Primary factor technical change		All-input using technical change		Technical change in capital creation		Commodity-using technical change		Total
	Tasmania (1)	Mainland (2)	Tasmania (3)	Mainland (4)	Tasmania (5)	Mainland (6)	Tasmania (7)	Australia-wide (8)	(9)
23 Investment price index	-0.75	-0.27	0.35	0.55	1.10	-0.01	-0.07	-2.08	-1.17
24	0.00	-1.33	0.01	0.69	0.00	0.70	0.01	-1.29	-1.22
25 Consumption price index	-0.12	0.79	-0.68	0.17	0.03	-0.01	-0.27	0.35	0.24
26	0.00	-0.02	0.01	0.00	0.00	0.00	0.01	-0.01	-0.01
27 Export price index	-1.06	0.46	0.47	0.58	0.01	-0.01	0.05	-1.49	-1.00
28	-0.01	-0.48	0.02	0.75	0.00	-0.01	0.01	-0.93	-0.64
29 Regional government price index	-0.85	-0.08	-0.73	0.02	0.01	0.00	-0.02	0.74	-0.91
30	0.00	-1.38	0.01	-0.07	0.00	0.00	0.00	0.07	-1.36
31 Commonwealth government price index	-0.84	-0.08	-0.73	0.03	0.01	0.00	-0.02	0.73	-0.90
32	0.00	-1.38	0.01	-0.07	0.00	0.00	0.00	0.07	-1.36
33 Foreign import price index	-0.01	0.65	0.03	0.72	0.00	-0.02	0.01	-1.17	0.20
34	-0.01	0.64	0.03	0.72	0.00	-0.02	0.01	-1.17	0.20
35 Interstate import price index	0.00	-1.19	0.01	0.45	0.00	0.00	0.01	-0.37	-1.08
36	-1.39	0.37	0.60	0.45	0.01	-0.01	0.04	-1.41	-1.34
37 Interstate export price index	-1.39	0.37	0.60	0.45	0.01	-0.01	0.04	-1.41	-1.34
38	0.00	-1.19	0.01	0.45	0.00	0.00	0.01	-0.37	-1.08
39 Real pre tax wage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41 GSP Deflator	-0.92	1.11	-0.37	0.18	0.19	-0.01	-0.19	-0.27	-0.28
42	0.01	-0.77	0.01	0.12	0.00	0.17	0.01	-0.21	-0.66

** For each variable, the first row contains the Tasmanian results, and the second row contains the Mainland results.*

Table D.3: Technical Change (continued)

Variable	Primary factor technical change		All-input using technical change		Technical change in capital creation		Commodity-using technical change		Total
	Tasmania (1)	Mainland (2)	Tasmania (3)	Mainland (4)	Tasmania (5)	Mainland (6)	Tasmania (7)	Australia-wide (8)	(9)
National Macroeconomic Variables									
43 Real GDP (at market prices)	0.06	3.74	-0.02	-0.54	0.00	-0.14	0.01	-0.09	3.02
44 Real investment	0.08	5.01	-0.03	-1.06	0.01	-0.24	0.01	0.68	4.45
45 Real consumption	0.03	1.94	-0.01	-0.36	0.00	0.01	0.01	-0.16	1.45
46 Real exports	0.18	11.88	-0.02	-0.18	-0.01	-0.11	0.02	-2.37	9.38
47 Real reg. gov. consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48 Real Com. Gov. consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49 Real imports	0.05	4.20	-0.01	0.17	0.00	0.22	0.00	-1.45	3.20
50 Investment price index	-0.01	-1.31	0.02	0.68	0.01	0.69	0.00	-1.30	-1.22
51 Consumption price index	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52 Export price index	-0.03	-0.46	0.03	0.75	0.00	-0.01	0.01	-0.94	-0.65
53 Reg. gov. price index	-0.02	-1.34	-0.02	-0.06	0.00	0.00	0.00	0.09	-1.35
54 Com. gov. price index	-0.02	-1.35	-0.01	-0.06	0.00	0.00	0.00	0.09	-1.35
55 Import price index	-0.01	0.64	0.03	0.72	0.00	-0.02	0.01	-1.17	0.20
56 GDP Deflator	-0.01	-0.73	0.00	0.13	0.00	0.16	0.00	-0.21	-0.65
57 Nominal exchange rate	-0.01	0.64	0.03	0.71	0.00	-0.02	0.01	-1.15	0.20
58 Real exchange rate (1)	0.00	-1.37	-0.03	-0.59	0.01	0.18	-0.01	0.96	-0.85
59 Real exchange rate (2)	0.00	-1.29	0.00	0.10	0.00	0.01	0.00	0.19	-1.00
60 BOT / GDP ratio	0.02	1.27	0.00	-0.10	0.00	-0.08	0.00	-0.08	1.03
61 Terms of trade	-0.01	-1.10	0.00	0.03	0.00	0.01	0.00	0.22	-0.85

Table D.3: Technical Change (continued)

Variable	Primary factor technical change		All-input using technical change		Technical change in capital creation		Commodity-using technical change		Total
	Tasmania (1)	Mainland (2)	Tasmania (3)	Mainland (4)	Tasmania (5)	Mainland (6)	Tasmania (7)	Australia-wide (8)	(9)
Tasmanian Sectoral Outputs									
62 1. Agriculture	3.88	1.14	0.54	0.61	0.00	-0.03	0.12	-2.36	3.91
63 2. Mining	19.31	3.36	-3.41	2.29	-0.01	-0.08	-0.65	-2.45	18.36
64 3. Manufacturing	3.79	1.59	-2.45	0.79	0.04	-0.03	-0.23	0.41	3.91
65 4. Utilities	3.60	1.47	-1.17	0.32	0.02	-0.02	1.54	-0.74	5.02
66 5. Construction	2.20	3.22	-2.07	0.08	1.14	-0.03	0.16	-0.32	4.39
67 6. Margin industries	1.87	1.64	-0.63	0.05	0.07	-0.02	-0.75	0.81	3.06
68 7. Communications	2.60	2.54	-0.70	0.08	0.05	-0.02	0.09	2.32	6.95
69 8. Finance	1.67	1.56	-0.73	0.25	0.07	-0.02	-0.02	1.36	4.14
70 9. Dwellings	0.00	0.00	0.56	0.00	0.00	0.00	0.00	0.00	0.56
71 10. Public administration	0.03	0.03	-0.01	0.00	0.00	0.00	0.00	0.00	0.05
72 11. Community services	0.46	0.91	-0.24	-0.01	0.02	-0.01	0.06	-0.10	1.09
73 12. Entertainment and recreation	0.25	1.71	-0.68	0.01	0.05	-0.03	0.12	0.04	1.47
Mainland Sectoral Outputs									
74 1. Agriculture	-0.01	5.65	0.02	0.70	0.00	-0.02	0.01	-1.43	4.92
75 2. Mining	-0.01	4.39	0.02	0.31	0.00	-0.03	0.01	-1.35	3.33
76 3. Manufacturing	0.00	6.15	0.03	-1.39	0.00	-0.01	0.01	-0.98	3.80
77 4. Utilities	0.05	3.96	-0.01	-0.11	0.00	0.00	0.00	-2.50	1.40
78 5. Construction	0.05	5.06	-0.01	-1.20	0.01	0.28	0.01	0.33	4.53
79 6. Margin industries	0.00	4.80	0.02	-0.11	0.00	0.04	0.01	-0.19	4.56
80 7. Communications	0.03	5.13	0.01	-0.01	0.00	-0.02	0.01	4.19	9.34
81 8. Finance	0.03	3.85	0.00	-0.19	0.00	0.01	0.00	1.22	4.92
82 9. Dwellings	0.00	0.00	0.00	0.37	0.00	0.00	0.00	0.00	0.37
83 10. Public administration	0.01	1.02	0.00	-0.05	0.00	0.00	0.00	-0.09	0.89
84 11. Community services	0.01	1.45	0.00	-0.14	0.00	0.00	0.00	-0.21	1.11
85 12. Entertainment and recreation	0.02	2.84	0.00	-0.32	0.00	-0.03	0.00	-0.29	2.23

Table D.3: Technical Change (continued)

Variable	Primary factor technical change		All-input using technical change		Technical change in capital creation		Commodity-using technical change		Total
	Tasmania (1)	Mainland (2)	Tasmania (3)	Mainland (4)	Tasmania (5)	Mainland (6)	Tasmania (7)	Australia-wide (8)	(9)
Tasmanian Sectoral Employments									
86 1. Agriculture	2.25	1.84	0.68	0.97	0.01	-0.05	0.20	-3.74	2.14
87 2. Mining	10.70	3.73	-2.98	2.59	-0.01	-0.08	-0.55	-2.72	10.67
88 3. Manufacturing	1.23	2.07	-1.80	0.95	0.05	-0.04	-0.32	0.59	2.73
89 4. Utilities	-8.90	3.19	-2.99	0.75	0.03	-0.05	3.02	-1.35	-6.29
90 5. Construction	-0.60	3.52	-1.44	0.08	1.20	-0.03	0.19	-0.28	2.65
91 6. Margin industries	0.54	2.29	-1.38	0.08	0.10	-0.02	-1.05	1.09	1.65
92 7. Communications	-6.93	2.45	-1.65	0.07	0.05	-0.02	0.09	2.23	-3.71
93 8. Finance	5.44	1.97	-1.57	0.31	0.08	-0.03	-0.01	1.69	7.88
94 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95 10. Public administration	-2.98	0.03	-0.80	0.00	0.00	0.00	0.00	0.00	-3.75
96 11. Community services	-0.29	0.93	-0.69	-0.01	0.02	-0.01	0.06	-0.10	-0.09
97 12. Entertainment and recreation	3.15	2.36	-1.25	0.01	0.06	-0.03	0.19	0.03	4.53
Mainland Sectoral Employments									
98 1. Agriculture	-0.01	4.04	0.04	0.92	0.00	-0.04	0.01	-2.72	2.24
99 2. Mining	-0.03	4.38	0.05	1.07	0.00	-0.06	0.02	-3.11	2.31
100 3. Manufacturing	0.01	2.97	0.03	-0.15	0.00	0.00	0.01	-1.26	1.60
101 4. Utilities	0.12	-9.21	-0.02	1.46	0.00	0.00	0.01	-5.86	-13.50
102 5. Construction	0.06	0.62	-0.01	-0.48	0.01	0.32	0.01	0.32	0.84
103 6. Margin industries	0.00	2.20	0.03	-0.65	0.00	0.05	0.01	-0.31	1.32
104 7. Communications	0.05	-2.10	0.01	-1.62	0.00	-0.03	0.01	7.76	4.09
105 8. Finance	0.04	3.58	0.00	-0.97	0.00	0.02	0.01	1.87	4.56
106 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107 10. Public administration	0.01	-3.09	0.00	-0.13	0.00	0.00	0.00	-0.10	-3.32
108 11. Community services	0.01	0.73	0.00	-0.26	0.00	0.00	0.00	-0.23	0.26
109 12. Entertainment and recreation	0.03	5.06	-0.01	-0.75	0.00	-0.03	0.01	-0.43	3.87

Table D.3: Technical Change (continued)

Variable	Primary factor technical change		All-input using technical change		Technical change in capital creation		Commodity-using technical change		Total
	Tasmania (1)	Mainland (2)	Tasmania (3)	Mainland (4)	Tasmania (5)	Mainland (6)	Tasmania (7)	Australia-wide (8)	(9)
Tasmanian Sectoral Export Volumes									
110 1. Agriculture	9.16	-0.65	1.15	1.41	-0.02	0.00	0.32	0.42	11.78
111 2. Mining	38.53	2.05	-6.56	4.58	-0.18	-0.16	-1.72	2.42	38.97
112 3. Manufacturing	8.94	2.80	-5.28	1.21	-0.08	-0.05	-0.69	3.83	10.67
113 4. Utilities	4.46	2.19	1.13	2.48	-0.15	-0.06	-0.01	-4.96	5.08
114 5. Construction	1.51	0.37	-2.51	0.76	-0.02	0.02	0.42	1.50	2.05
115 6. Margin industries	4.46	2.19	1.13	2.48	-0.15	-0.06	-0.01	-4.96	5.08
116 7. Communications	4.46	2.19	1.13	2.48	-0.15	-0.06	-0.01	-4.96	5.08
117 8. Finance	4.46	2.19	1.13	2.48	-0.15	-0.06	-0.01	-4.96	5.08
118 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
119 10. Public administration	4.46	2.19	1.13	2.48	-0.15	-0.06	-0.01	-4.96	5.08
120 11. Community services	4.46	2.19	1.13	2.48	-0.15	-0.06	-0.01	-4.96	5.08
121 12. Entertainment and recreation	4.46	2.19	1.13	2.48	-0.15	-0.06	-0.01	-4.96	5.08
Mainland Sectoral Export Volumes									
122 1. Agriculture	0.00	5.40	0.01	2.07	0.00	0.00	0.01	-0.07	7.41
123 2. Mining	-0.02	3.26	0.03	0.85	0.00	-0.04	0.00	0.23	4.31
124 3. Manufacturing	-0.08	16.78	0.10	-4.18	-0.01	-0.13	0.03	-0.23	12.29
125 4. Utilities	-0.11	15.47	0.13	4.38	-0.01	-0.13	0.04	-9.39	10.38
126 5. Construction	-0.11	15.47	0.13	4.38	-0.01	-0.13	0.04	-9.38	10.38
127 6. Margin industries	-0.11	15.47	0.13	4.38	-0.01	-0.13	0.04	-9.39	10.38
128 7. Communications	-0.11	15.47	0.13	4.38	-0.01	-0.13	0.04	-9.39	10.38
129 8. Finance	-0.11	15.47	0.13	4.38	-0.01	-0.13	0.04	-9.39	10.38
130 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
131 10. Public administration	-0.11	15.47	0.13	4.38	-0.01	-0.13	0.04	-9.39	10.38
132 11. Community services	-0.11	15.47	0.13	4.38	-0.01	-0.13	0.04	-9.39	10.38
133 12. Entertainment and recreation	-0.11	15.47	0.13	4.38	-0.01	-0.13	0.04	-9.39	10.38

Table D.3: Technical Change (continued)

Variable	Primary factor technical change		All-input using technical change		Technical change in capital creation		Commodity-using technical change		Total
	Tasmania (1)	Mainland (2)	Tasmania (3)	Mainland (4)	Tasmania (5)	Mainland (6)	Tasmania (7)	Australia-wide (8)	(9)
Tasmanian Sectoral Basic Prices									
134 1. Agriculture	-0.47	0.73	-0.13	0.46	0.01	-0.02	-0.05	-1.05	-0.53
135 2. Mining	-2.50	0.50	0.39	0.42	0.01	-0.01	0.09	-1.21	-2.31
136 3. Manufacturing	-1.16	0.36	0.71	0.49	0.01	-0.01	0.03	-1.55	-1.12
137 4. Utilities	-8.19	1.70	-2.01	0.63	0.02	-0.02	1.19	-0.48	-7.17
138 5. Construction	-1.24	0.26	0.51	0.32	0.09	0.00	-0.09	-1.01	-1.17
139 6. Margin industries	-0.21	0.82	-1.01	0.07	0.04	-0.01	-0.38	0.97	0.28
140 7. Communications	-3.83	-0.92	-1.07	-0.05	0.00	0.00	-0.03	1.61	-4.28
141 8. Finance	2.37	0.32	-0.99	0.02	0.02	-0.01	-0.08	1.16	2.80
142 9. Dwellings	1.49	3.74	-2.27	-0.09	0.08	-0.04	0.30	0.19	3.38
143 10. Public administration	-2.22	-0.14	-1.08	0.03	0.01	0.00	-0.11	1.20	-2.32
144 11. Community services	-0.41	-0.12	-0.62	0.00	0.00	0.00	0.01	0.65	-0.49
145 12. Entertainment and recreation	2.22	0.82	-0.81	0.02	0.03	-0.01	0.00	0.43	2.71
Mainland Sectoral Basic Prices									
146 1. Agriculture	-0.01	0.68	0.03	0.66	0.00	-0.02	0.01	-1.74	-0.40
147 2. Mining	-0.01	0.64	0.03	0.81	0.00	-0.02	0.01	-1.60	-0.14
148 3. Manufacturing	-0.01	-0.99	0.02	1.64	0.00	-0.01	0.01	-1.89	-1.23
149 4. Utilities	0.05	-6.96	0.00	1.80	0.00	0.00	0.01	-3.59	-8.69
150 5. Construction	0.00	-2.24	0.00	0.98	0.00	0.00	0.00	-0.99	-2.23
151 6. Margin industries	0.00	-1.19	0.01	-0.53	0.00	0.01	0.01	0.41	-1.28
152 7. Communications	0.02	-3.97	0.01	-1.47	0.00	-0.01	0.01	4.16	-1.25
153 8. Finance	0.02	0.23	0.01	-0.88	0.00	0.01	0.01	1.37	0.76
154 9. Dwellings	0.04	3.72	0.00	-1.38	0.00	0.01	0.01	-0.15	2.24
155 10. Public administration	0.00	-2.70	0.01	-0.04	0.00	0.00	0.00	0.08	-2.65
156 11. Community services	0.00	-0.74	0.00	-0.14	0.00	0.00	0.00	0.18	-0.68
157 12. Entertainment and recreation	0.01	1.01	0.01	-0.39	0.00	0.00	0.01	0.25	0.89

Table D.4

Foreign Factors

Table D.4: Foreign Factors

Variable	Shifts in Foreign Export Demand Schedules								Import Prices	Total
	Tasmania				Mainland					
	Agriculture (1)	Mining (2)	Manufact'g (3)	General (4)	Agriculture (5)	Mining (6)	Manufact'g (7)	General (8)	(9)	(10)
				Regional Macroeconomic Variables						
1 Real GRP (at factor cost)	0.03	0.16	-0.65	2.97	0.16	0.25	0.38	-3.10	-0.43	-0.23
2	0.00	0.00	0.00	-0.03	0.01	-0.10	-0.27	1.49	-0.78	0.33
3 Capital stock (rental weights)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5 Employment	0.04	0.22	-0.92	3.93	0.21	0.32	0.49	-4.08	-0.56	-0.35
6	0.00	0.00	0.01	-0.04	0.04	-0.10	-0.44	2.19	-1.09	0.54
7 Real investment	0.24	0.26	-0.81	5.73	0.29	0.26	0.64	-4.35	-1.25	1.01
8	0.00	0.00	0.01	-0.05	0.02	-1.26	-0.47	5.01	-2.46	0.79
9 Real household consumption	0.05	0.08	0.05	1.43	0.10	-0.10	0.12	-0.16	-0.58	0.98
10	0.00	0.00	0.00	0.00	-0.07	-0.21	-0.24	2.33	-1.02	0.80
11 Real exports	-0.28	1.02	-4.51	23.29	1.10	3.18	3.99	-29.45	-1.76	-3.40
12	-0.01	-0.02	0.06	-0.36	0.56	1.18	-0.47	1.17	-1.31	0.81
13 Real regional government consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Real Commonwealth consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Foreign imports	0.13	0.15	-0.46	5.15	0.26	0.64	-0.05	-2.71	-2.46	0.65
18	0.00	0.00	0.00	0.00	0.12	-0.53	-0.62	5.02	-2.72	1.26
19 Interstate imports	0.04	0.25	-0.77	4.31	0.28	0.35	0.63	-4.28	-0.55	0.25
20	-0.05	-0.04	0.17	-2.30	-0.01	-0.35	-0.93	3.14	0.24	-0.13
21 Interstate exports	-0.05	-0.04	0.17	-2.30	-0.01	-0.35	-0.93	3.14	0.24	-0.13
22	0.04	0.25	-0.77	4.31	0.28	0.35	0.63	-4.28	-0.55	0.25

Table D.4: Foreign Factors (continued)

Variable	Shifts in Foreign Export Demand Schedules								Import Prices	Total
	Tasmania				Mainland					
	Agriculture (1)	Mining (2)	Manufact'g (3)	General (4)	Agriculture (5)	Mining (6)	Manufact'g (7)	General (8)	(9)	(10)
23 Investment price index	0.00	0.03	-0.08	0.64	0.11	0.04	0.13	-1.40	0.30	-0.25
24	0.00	0.00	0.00	-0.03	0.12	0.06	0.16	-1.63	0.71	-0.61
25 Consumption price index	0.03	0.08	-0.21	1.50	0.09	0.02	0.18	-1.16	-0.28	0.24
26	0.00	0.00	0.00	-0.03	0.00	0.00	0.00	0.03	0.01	-0.01
27 Export price index	0.19	0.08	-0.76	2.65	0.15	0.22	0.38	-4.33	0.09	-1.33
28	0.00	0.00	0.01	-0.06	-0.21	-1.03	0.02	-0.79	0.05	-2.00
29 Regional government price index	0.00	0.02	-0.08	0.39	0.05	0.01	0.06	-0.36	-0.09	0.00
30	0.00	0.00	0.00	-0.01	-0.03	0.01	0.04	-0.29	0.10	-0.18
31 Commonwealth government price index	0.00	0.02	-0.08	0.39	0.05	0.01	0.06	-0.38	-0.08	-0.01
32	0.00	0.00	0.00	-0.02	-0.03	0.01	0.04	-0.29	0.10	-0.18
33 Foreign import price index	0.00	-0.01	0.01	-0.09	0.24	0.48	0.72	-6.78	3.47	-1.95
34	0.00	-0.01	0.01	-0.09	0.24	0.48	0.71	-6.76	3.07	-2.34
35 Interstate import price index	0.00	0.00	0.00	-0.03	0.03	-0.13	-0.06	-0.07	-0.05	-0.31
36	0.04	0.02	-0.30	1.54	0.11	0.17	0.26	-2.81	0.38	-0.58
37 Interstate export price index	0.04	0.02	-0.30	1.54	0.11	0.17	0.25	-2.80	0.38	-0.58
38	0.00	0.00	0.00	-0.03	0.03	-0.13	-0.06	-0.07	-0.05	-0.31
39 Real pre tax wage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41 GSP Deflator	0.06	0.08	-0.38	2.07	0.11	0.12	0.25	-1.97	-0.31	0.04
42	0.00	0.00	0.00	-0.03	-0.08	-0.30	-0.12	0.96	-0.50	-0.05

** For each variable, the first row contains the Tasmanian results, and the second row contains the Mainland results.*

Table D.4: Foreign Factors (continued)

Variable	Shifts in Foreign Export Demand Schedules								Import Prices	Total
	Tasmania				Mainland					
	Agriculture (1)	Mining (2)	Manufact'g (3)	General (4)	Agriculture (5)	Mining (6)	Manufact'g (7)	General (8)	(9)	(10)
National macroeconomic variables										
43 Real GDP (at market prices)	0.00	0.00	0.00	0.03	0.05	-0.04	-0.19	1.54	-0.83	0.56
44 Real investment	0.00	0.00	-0.01	0.06	0.02	-1.23	-0.45	4.83	-2.44	0.78
45 Real consumption	0.00	0.00	0.00	0.03	-0.07	-0.20	-0.23	2.28	-1.01	0.80
46 Real exports	-0.01	0.00	-0.01	0.03	0.57	1.22	-0.39	0.64	-1.31	0.74
47 Real reg. gov. consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48 Real Com. Gov. consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49 Real imports	0.00	0.00	0.00	0.03	0.12	-0.52	-0.62	4.96	-2.72	1.25
50 Investment price index	0.00	0.00	0.00	-0.02	0.11	0.06	0.16	-1.62	0.71	-0.60
51 Consumption price index	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52 Export price index	0.00	0.00	-0.01	-0.01	-0.21	-1.00	0.03	-0.85	0.05	-1.99
53 Reg. gov. price index	0.00	0.00	0.00	0.00	-0.02	0.01	0.04	-0.29	0.10	-0.18
54 Com. Gov. price index	0.00	0.00	0.00	-0.01	-0.02	0.01	0.04	-0.29	0.10	-0.18
55 Import price index	0.00	-0.01	0.01	-0.09	0.24	0.48	0.71	-6.76	3.07	-2.34
56 GDP Deflator	0.00	0.00	0.00	0.01	-0.07	-0.29	-0.11	0.90	-0.49	-0.05
57 Nominal exchange rate	0.00	-0.01	0.01	-0.09	0.24	0.47	0.69	-6.67	-0.07	-5.42
58 Real exchange rate (1)	0.00	0.01	-0.01	0.10	-0.32	-0.77	-0.82	7.66	-3.56	2.29
59 Real exchange rate (2)	0.00	0.00	-0.01	0.07	-0.32	-1.03	-0.69	5.95	-2.76	1.23
60 BOT / GDP ratio	0.00	0.00	0.00	0.02	-0.01	0.03	-0.10	0.44	-0.37	0.01
61 Terms of trade	0.00	0.00	-0.02	0.08	-0.47	-1.52	-0.74	6.23	-3.04	0.53

Table D.4: Foreign Factors (continued)

Variable	Shifts in Foreign Export Demand Schedules								Import Prices	Total
	Tasmania				Mainland					
	Agriculture (1)	Mining (2)	Manufact'g (3)	General (4)	Agriculture (5)	Mining (6)	Manufact'g (7)	General (8)	(9)	(10)
Tasmanian Sectoral Outputs										
62 1. Agriculture	0.31	-0.03	-2.06	4.78	0.15	0.52	0.55	-6.35	-0.16	-2.30
63 2. Mining	-0.05	5.82	-0.66	9.62	0.55	1.05	1.69	-18.49	-0.47	-0.96
64 3. Manufacturing	-0.09	-0.08	-1.56	5.21	0.30	0.73	0.73	-6.13	-0.46	-1.35
65 4. Utilities	-0.01	0.22	-1.17	4.01	0.17	0.59	0.61	-4.98	-0.40	-0.95
66 5. Construction	0.05	0.24	-0.82	5.16	0.26	0.24	0.57	-3.93	-1.07	0.71
67 6. Margin industries	0.03	0.19	-0.28	2.24	0.14	0.05	0.24	-1.51	-0.62	0.49
68 7. Communications	0.05	0.13	-0.14	2.37	0.11	-0.08	0.17	-0.96	-0.71	0.94
69 8. Finance	0.00	0.18	-0.42	2.66	0.14	0.11	0.31	-2.31	-0.48	0.19
70 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
71 10. Public administration	0.00	0.00	-0.01	0.04	0.00	0.00	0.01	-0.04	-0.01	0.00
72 11. Community services	0.02	0.05	-0.04	0.93	0.06	-0.04	0.09	-0.30	-0.31	0.47
73 12. Entertainment and recreation	0.05	0.11	-0.09	2.01	0.13	-0.06	0.18	-0.79	-0.64	0.92
Mainland Sectoral Outputs										
74 1. Agriculture	0.00	0.00	0.00	-0.06	-3.32	0.48	-0.12	0.14	-0.16	-3.03
75 2. Mining	0.00	-0.01	0.01	-0.06	0.17	-4.80	0.51	-1.61	-0.22	-6.02
76 3. Manufacturing	0.00	0.00	0.01	-0.07	0.54	0.89	-1.68	0.52	-0.27	-0.06
77 4. Utilities	0.00	0.00	-0.01	0.02	0.12	0.23	-0.82	0.92	-0.57	-0.11
78 5. Construction	0.00	0.00	0.00	0.00	-0.04	-0.78	-0.32	4.46	-2.17	1.16
79 6. Margin industries	0.00	0.00	0.01	-0.06	0.18	0.14	-0.07	2.28	-1.14	1.34
80 7. Communications	0.00	0.00	0.01	-0.03	0.21	0.34	0.30	2.14	-1.01	1.95
81 8. Finance	0.00	0.00	0.00	-0.01	0.10	-0.04	-0.10	1.83	-0.91	0.88
82 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
83 10. Public administration	0.00	0.00	0.00	0.00	0.04	0.03	-0.05	0.48	-0.24	0.26
84 11. Community services	0.00	0.00	0.00	0.00	-0.01	-0.05	-0.04	1.19	-0.53	0.56
85 12. Entertainment and recreation	0.00	0.00	0.00	-0.01	0.02	-0.05	-0.09	2.87	-1.20	1.54

Table D.4: Foreign Factors (continued)

Variable	Shifts in Foreign Export Demand Schedules								Import Prices	Total
	Tasmania				Mainland					
	Agriculture (1)	Mining (2)	Manufact'g (3)	General (4)	Agriculture (5)	Mining (6)	Manufact'g (7)	General (8)	(9)	(10)
Tasmanian Sectoral Employments										
86 1. Agriculture	0.48	-0.05	-3.36	7.46	0.22	0.80	0.82	-9.78	-0.25	-3.67
87 2. Mining	-0.06	6.90	-0.74	11.21	0.64	1.20	1.95	-21.54	-0.51	-0.96
88 3. Manufacturing	-0.10	-0.10	-2.43	6.90	0.39	0.98	0.97	-8.01	-0.60	-2.00
89 4. Utilities	-0.01	0.49	-2.44	8.93	0.37	1.29	1.29	-11.06	-0.84	-2.00
90 5. Construction	0.05	0.25	-0.91	5.71	0.28	0.26	0.63	-4.29	-1.17	0.81
91 6. Margin industries	0.04	0.25	-0.41	3.22	0.20	0.08	0.35	-2.17	-0.85	0.71
92 7. Communications	0.05	0.13	-0.13	2.34	0.10	-0.07	0.17	-0.94	-0.69	0.95
93 8. Finance	-0.01	0.22	-0.56	3.41	0.17	0.14	0.39	-2.93	-0.60	0.24
94 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95 10. Public administration	0.00	0.00	-0.01	0.04	0.00	0.00	0.01	-0.04	-0.01	0.00
96 11. Community services	0.02	0.05	-0.04	0.96	0.06	-0.04	0.09	-0.30	-0.31	0.48
97 12. Entertainment and recreation	0.07	0.14	-0.15	2.85	0.18	-0.08	0.26	-1.10	-0.87	1.29
Mainland Sectoral Employments										
98 1. Agriculture	0.00	-0.01	0.01	-0.10	-5.90	0.87	-0.20	0.24	-0.29	-5.38
99 2. Mining	0.00	-0.01	0.02	-0.15	0.39	-11.01	1.19	-3.78	-0.48	-13.83
100 3. Manufacturing	0.00	0.00	0.01	-0.08	0.84	1.06	-2.63	0.82	-0.31	-0.29
101 4. Utilities	0.00	0.00	-0.03	0.05	0.30	0.57	-1.98	2.27	-1.35	-0.18
102 5. Construction	0.00	0.00	0.00	0.00	-0.04	-0.89	-0.35	5.02	-2.42	1.32
103 6. Margin industries	0.00	0.00	0.01	-0.08	0.24	0.18	-0.06	2.92	-1.46	1.75
104 7. Communications	0.00	0.00	0.01	-0.07	0.40	0.65	0.59	4.16	-1.86	3.89
105 8. Finance	0.00	0.00	0.00	-0.02	0.16	-0.06	-0.16	2.95	-1.43	1.44
106 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107 10. Public administration	0.00	0.00	0.00	0.00	0.04	0.03	-0.05	0.49	-0.24	0.26
108 11. Community services	0.00	0.00	0.00	-0.01	-0.01	-0.05	-0.04	1.26	-0.56	0.59
109 12. Entertainment and recreation	0.00	0.00	0.00	-0.02	0.02	-0.06	-0.13	3.98	-1.62	2.18

Table D.4: Foreign Factors (continued)

Variable	Shifts in Foreign Export Demand Schedules								Import Prices	Total
	Tasmania				Mainland					
	Agriculture (1)	Mining (2)	Manufact'g (3)	General (4)	Agriculture (5)	Mining (6)	Manufact'g (7)	General (8)	(9)	(10)
Tasmanian Sectoral Export Volumes										
110 1. Agriculture	2.88	-0.05	11.37	10.16	1.25	0.89	2.26	-14.59	0.36	14.54
111 2. Mining	-0.09	11.73	3.36	17.36	0.82	4.87	4.08	-36.44	-0.02	5.67
112 3. Manufacturing	-0.53	-0.21	-9.60	26.95	1.13	3.24	4.29	-30.68	-2.47	-7.88
113 4. Utilities	0.18	-0.06	1.99	40.00	1.53	2.73	4.03	-38.89	-3.05	8.46
114 5. Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115 6. Margin industries	0.18	-0.06	1.99	40.00	1.53	2.73	4.03	-38.89	-3.05	8.46
116 7. Communications	0.18	-0.06	1.99	40.00	1.53	2.73	4.03	-38.89	-3.05	8.46
117 8. Finance	0.18	-0.06	1.99	40.00	1.53	2.73	4.03	-38.89	-3.05	8.46
118 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
119 10. Public administration	0.18	-0.06	1.99	40.00	1.53	2.73	4.03	-38.89	-3.05	8.46
120 11. Community services	0.18	-0.06	1.99	40.00	1.53	2.73	4.03	-38.89	-3.05	8.46
121 12. Entertainment and recreation	0.18	-0.06	1.99	40.00	1.53	2.73	4.03	-38.89	-3.05	8.46
Mainland Sectoral Export Volumes										
122 1. Agriculture	0.00	-0.01	0.06	-0.15	-12.94	0.68	8.41	0.44	-0.57	-4.07
123 2. Mining	0.00	-0.01	0.02	-0.11	0.13	-9.11	2.70	-2.67	-0.07	-9.13
124 3. Manufacturing	-0.01	-0.03	0.08	-0.48	3.22	5.55	-7.95	1.77	-1.85	0.29
125 4. Utilities	-0.01	-0.03	0.06	-0.47	1.55	4.62	5.53	4.55	-1.90	13.90
126 5. Construction	-0.01	-0.03	0.06	-0.47	1.55	4.62	5.53	4.57	-1.90	13.93
127 6. Margin industries	-0.01	-0.03	0.06	-0.47	1.55	4.62	5.53	4.55	-1.90	13.90
128 7. Communications	-0.01	-0.03	0.06	-0.47	1.55	4.62	5.53	4.55	-1.90	13.90
129 8. Finance	-0.01	-0.03	0.06	-0.47	1.55	4.62	5.53	4.55	-1.90	13.90
130 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	148.97	0.00	148.97
131 10. Public administration	-0.01	-0.03	0.06	-0.47	1.55	4.62	5.53	4.55	-1.90	13.90
132 11. Community services	-0.01	-0.03	0.06	-0.47	1.55	4.62	5.53	4.55	-1.90	13.90
133 12. Entertainment and recreation	-0.01	-0.03	0.06	-0.47	1.55	4.62	5.53	4.55	-1.90	13.90

Table D.4: Foreign Factors (continued)

Variable	Shifts in Foreign Export Demand Schedules								Import Prices	Total
	Tasmania				Mainland					
	Agriculture (1)	Mining (2)	Manufact'g (3)	General (4)	Agriculture (5)	Mining (6)	Manufact'g (7)	General (8)	(9)	(10)
Tasmanian Sectoral Basic Prices										
134 1. Agriculture	0.39	0.00	-1.45	3.02	0.08	0.31	0.37	-4.29	-0.08	-1.64
135 2. Mining	0.00	0.47	-0.25	2.53	0.19	0.14	0.43	-4.23	-0.07	-0.80
136 3. Manufacturing	0.02	0.03	-0.48	1.76	0.09	0.17	0.25	-2.89	0.25	-0.81
137 4. Utilities	-0.01	0.28	-1.36	5.41	0.26	0.64	0.80	-7.01	-0.43	-1.42
138 5. Construction	0.00	0.05	-0.14	0.98	0.10	0.01	0.09	-1.06	-0.08	-0.05
139 6. Margin industries	0.00	0.11	-0.25	1.58	0.11	0.06	0.19	-1.28	-0.33	0.21
140 7. Communications	0.00	0.01	-0.02	0.15	0.11	0.01	0.12	-0.32	-0.03	0.03
141 8. Finance	0.00	0.06	-0.18	1.10	0.09	0.04	0.14	-0.85	-0.23	0.17
142 9. Dwellings	0.13	0.22	-0.05	4.10	0.30	-0.20	0.39	-1.23	-1.39	2.26
143 10. Public administration	0.00	0.02	-0.06	0.35	0.05	0.01	0.06	-0.34	-0.07	0.03
144 11. Community services	0.00	0.02	-0.04	0.26	0.04	-0.01	0.04	-0.20	-0.08	0.04
145 12. Entertainment and recreation	0.02	0.06	-0.13	1.35	0.09	-0.02	0.14	-0.69	-0.36	0.47
Mainland Sectoral Basic Prices										
146 1. Agriculture	0.00	-0.01	0.01	-0.08	-3.66	0.50	-0.09	-0.29	0.03	-3.60
147 2. Mining	0.00	-0.01	0.01	-0.09	0.26	-5.08	0.61	-2.31	-0.04	-6.64
148 3. Manufacturing	0.00	0.00	0.00	-0.04	-0.02	-0.04	-0.19	-1.34	0.58	-1.04
149 4. Utilities	0.00	0.00	-0.01	0.00	0.23	-0.67	-0.74	0.39	-0.51	-1.31
150 5. Construction	0.00	0.00	0.00	-0.01	0.06	-0.10	0.00	-0.08	0.03	-0.10
151 6. Margin industries	0.00	0.00	0.01	-0.04	0.12	0.04	0.07	0.45	-0.25	0.41
152 7. Communications	0.00	0.00	0.01	-0.05	0.27	0.30	0.37	1.08	-0.53	1.44
153 8. Finance	0.00	0.00	0.00	-0.02	0.12	-0.02	-0.05	1.18	-0.57	0.65
154 9. Dwellings	0.00	0.00	0.01	-0.03	-0.08	-0.40	-0.42	4.48	-1.95	1.60
155 10. Public administration	0.00	0.00	0.00	-0.02	0.08	0.02	0.07	-0.62	0.26	-0.21
156 11. Community services	0.00	0.00	0.00	-0.01	0.04	-0.01	0.03	-0.15	0.05	-0.05
157 12. Entertainment and recreation	0.00	0.00	0.00	-0.03	0.05	0.01	0.05	0.20	-0.10	0.19

Table D.5

Capital Supply Schedule Shifts

Table D.5: Capital Supply Schedule Shifts

Variable	Capital Supply Shifts Located In:			Total
	Tasmania (1)	Mainland (2)	Australia-wide (3)	(4)
Regional Macroeconomic Variables				
1 Real GRP (at factor cost)	0.76	-0.45	-0.35	-0.05
2	0.00	0.84	-0.31	0.52
3 Capital stock (rental weights)	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00
5 Employment	0.98	-0.60	-0.45	-0.08
6	0.00	1.24	-0.48	0.76
7 Real investment	8.64	-0.64	-5.33	2.67
8	0.00	11.81	-4.26	7.55
9 Real household consumption	0.35	0.09	-0.42	0.02
10	0.01	0.68	-0.40	0.29
11 Real exports	-0.85	-5.09	2.86	-3.08
12	-0.12	-6.33	2.91	-3.53
13 Real regional government consumption	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00
15 Real Commonwealth consumption	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00
17 Foreign imports	2.48	-0.61	-0.96	0.91
18	0.00	3.71	-1.29	2.42
19 Interstate imports	1.50	-0.55	-0.95	0.01
20	-0.15	1.07	-0.44	0.47
21 Interstate exports	-0.15	1.07	-0.44	0.47
22	1.50	-0.55	-0.95	0.01
23 Investment price index	0.47	-0.09	-0.31	0.07
24	-0.01	0.09	-0.08	0.00
25 Consumption price index	0.31	-0.21	-0.18	-0.07
26	-0.01	0.00	0.00	0.00
27 Export price index	0.05	-0.88	0.40	-0.44
28	-0.02	-0.74	0.43	-0.34
29 Regional government price index	0.07	-0.09	0.00	-0.02
30	0.00	-0.05	0.05	-0.01
31 Commonwealth government price index	0.07	-0.09	0.00	-0.02
32	0.00	-0.05	0.05	-0.01
33 Foreign import price index	-0.03	-1.32	0.67	-0.68
34	-0.03	-1.32	0.67	-0.68
35 Interstate import price index	-0.01	-0.12	0.10	-0.03
36	0.10	-0.55	0.22	-0.23
37 Interstate export price index	0.10	-0.55	0.22	-0.23
38	-0.01	-0.12	0.10	-0.03
39 Real pre tax wage	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00
41 GSP Deflator	0.34	-0.31	-0.16	-0.12
42	-0.01	0.14	-0.06	0.07

** For each variable, the first row contains the Tasmanian results, and the second row contains the Mainland results.*

Table D.5: Capital Supply Schedule Shifts (continued)

Variable	Capital Supply Shifts Located In:			Total
	Tasmania (1)	Mainland (2)	Australia-wide (3)	(4)
National Macroeconomic Variables				
43 Real GDP (at market prices)	0.02	0.81	-0.37	0.46
44 Real investment	0.18	11.58	-4.28	7.47
45 Real consumption	0.02	0.67	-0.41	0.28
46 Real exports	-0.13	-6.30	2.91	-3.53
47 Real regional government consumption	0.00	0.00	0.00	0.00
48 Real Commonwealth consumption	0.00	0.00	0.00	0.00
49 Real imports	0.02	3.68	-1.29	2.41
50 Investment price index	0.00	0.08	-0.09	0.00
51 Consumption price index	0.00	0.00	0.00	0.00
52 Export price index	-0.02	-0.74	0.42	-0.34
53 Regional government national price index	0.00	-0.06	0.04	-0.01
54 Commonwealth price index	0.00	-0.05	0.05	-0.01
55 Import price index	-0.03	-1.32	0.67	-0.68
56 GDP Deflator	0.00	0.13	-0.07	0.07
57 Nominal exchange rate	-0.03	-1.30	0.67	-0.67
58 Real exchange rate (1)	0.03	1.45	-0.74	0.75
59 Real exchange rate (2)	0.02	0.78	-0.38	0.41
60 BOT / GDP ratio	-0.02	-1.76	0.65	-1.13
61 Terms of trade	0.01	0.58	-0.27	0.33
Tasmanian Sectoral Outputs				
62 1. Agriculture	-0.13	-1.20	0.55	-0.78
63 2. Mining	-0.28	-4.19	2.23	-2.24
64 3. Manufacturing	0.39	-0.80	0.06	-0.35
65 4. Utilities	0.15	-0.76	0.19	-0.42
66 5. Construction	8.31	-0.59	-5.00	2.72
67 6. Margin industries	0.60	-0.17	-0.45	-0.02
68 7. Communications	0.56	0.03	-0.56	0.03
69 8. Finance	0.48	-0.32	-0.33	-0.18
70 9. Dwellings	0.00	0.00	0.00	0.00
71 10. Public administration	0.01	-0.01	0.00	0.00
72 11. Community services	0.21	0.01	-0.22	-0.01
73 12. Entertainment and recreation	0.48	0.02	-0.50	-0.01
Mainland Sectoral Outputs				
74 1. Agriculture	-0.02	-1.08	0.55	-0.55
75 2. Mining	-0.02	-0.98	0.34	-0.65
76 3. Manufacturing	0.00	0.21	-0.05	0.16
77 4. Utilities	0.00	0.08	-0.02	0.06
78 5. Construction	0.03	8.53	-3.42	5.14
79 6. Margin industries	-0.01	0.47	-0.08	0.38
80 7. Communications	-0.01	-0.36	0.24	-0.13
81 8. Finance	0.00	0.62	-0.24	0.38
82 9. Dwellings	0.00	0.00	0.00	0.00
83 10. Public administration	0.00	0.08	-0.04	0.04
84 11. Community services	0.00	0.22	-0.15	0.07
85 12. Entertainment and recreation	0.01	0.50	-0.29	0.21

Table D.5: Capital Supply Schedule Shifts (continued)

Variable	Capital Supply Shifts Located In:			Total
	Tasmania (1)	Mainland (2)	Australia-wide (3)	(4)
Tasmanian Sectoral Employments				
86 1. Agriculture	-0.21	-1.94	0.89	-1.26
87 2. Mining	-0.35	-4.92	2.80	-2.47
88 3. Manufacturing	0.50	-1.03	0.07	-0.46
89 4. Utilities	0.33	-1.78	0.51	-0.94
90 5. Construction	9.19	-0.64	-5.59	2.97
91 6. Margin industries	0.86	-0.24	-0.65	-0.03
92 7. Communications	0.54	0.03	-0.54	0.03
93 8. Finance	0.62	-0.41	-0.43	-0.22
94 9. Dwellings	0.00	0.00	0.00	0.00
95 10. Public administration	0.01	-0.01	0.00	0.00
96 11. Community services	0.21	0.01	-0.23	-0.01
97 12. Entertainment and recreation	0.70	0.03	-0.72	0.01
Mainland Sectoral Employments				
98 1. Agriculture	-0.04	-1.98	0.96	-1.06
99 2. Mining	-0.05	-2.42	1.02	-1.44
100 3. Manufacturing	0.00	0.26	-0.06	0.19
101 4. Utilities	0.00	0.20	-0.07	0.13
102 5. Construction	0.04	10.05	-4.25	5.84
103 6. Margin industries	-0.02	0.55	-0.09	0.45
104 7. Communications	-0.02	-0.69	0.48	-0.24
105 8. Finance	0.01	0.99	-0.39	0.60
106 9. Dwellings	0.00	0.00	0.00	0.00
107 10. Public administration	0.00	0.08	-0.04	0.04
108 11. Community services	0.00	0.23	-0.16	0.07
109 12. Entertainment and recreation	0.01	0.70	-0.42	0.28
Tasmanian Sectoral Exports				
110 1. Agriculture	-0.27	-2.00	1.35	-0.93
111 2. Mining	-1.49	-6.84	3.47	-4.86
112 3. Manufacturing	-0.83	-5.30	3.01	-3.11
113 4. Utilities	-0.80	-6.18	2.00	-4.98
114 5. Construction	-0.72	-2.53	2.74	-0.51
115 6. Margin industries	-0.80	-6.18	2.00	-4.98
116 7. Communications	-0.80	-6.18	2.00	-4.98
117 8. Finance	-0.80	-6.18	2.00	-4.98
118 9. Dwellings	0.00	0.00	0.00	0.00
119 10. Public administration	-0.80	-6.18	2.00	-4.98
120 11. Community services	-0.80	-6.18	2.00	-4.98
121 12. Entertainment and recreation	-0.80	-6.18	2.00	-4.98

Table D.5: Capital Supply Schedule Shifts (continued)

Variable	Capital Supply Shifts Located In:			Total
	Tasmania (1)	Mainland (2)	Australia-wide (3)	(4)
Mainland Sectoral Exports				
122 1. Agriculture	-0.04	-1.59	0.80	-0.83
123 2. Mining	-0.02	-1.43	0.45	-1.00
124 3. Manufacturing	-0.17	-8.76	4.38	-4.55
125 4. Utilities	-0.19	-9.98	5.20	-4.97
126 5. Construction	-0.19	-9.98	5.21	-4.97
127 6. Margin industries	-0.19	-9.98	5.20	-4.97
128 7. Communications	-0.19	-9.98	5.20	-4.97
129 8. Finance	-0.19	-9.98	5.20	-4.97
130 9. Dwellings	0.00	0.00	0.00	0.00
131 10. Public administration	-0.19	-9.98	5.20	-4.97
132 11. Community services	-0.19	-9.98	5.20	-4.97
133 12. Entertainment and recreation	-0.19	-9.98	5.20	-4.97
Tasmanian Sectoral Basic Prices				
134 1. Agriculture	0.01	-0.94	0.43	-0.50
135 2. Mining	0.07	-0.86	0.43	-0.35
136 3. Manufacturing	0.14	-0.58	0.17	-0.26
137 4. Utilities	0.27	-1.38	0.53	-0.58
138 5. Construction	0.65	-0.12	-0.42	0.11
139 6. Margin industries	0.40	-0.16	-0.25	-0.01
140 7. Communications	0.03	-0.18	0.07	-0.07
141 8. Finance	0.24	-0.15	-0.13	-0.04
142 9. Dwellings	1.03	0.05	-1.05	0.02
143 10. Public administration	0.06	-0.09	0.00	-0.03
144 11. Community services	0.06	-0.05	-0.01	0.00
145 12. Entertainment and recreation	0.33	-0.06	-0.27	0.00
Mainland Sectoral Basic Prices				
146 1. Agriculture	-0.03	-1.35	0.68	-0.70
147 2. Mining	-0.03	-1.36	0.73	-0.66
148 3. Manufacturing	-0.01	-0.45	0.25	-0.22
149 4. Utilities	-0.01	-0.23	0.13	-0.10
150 5. Construction	0.00	0.64	-0.40	0.24
151 6. Margin industries	-0.01	-0.01	0.05	0.03
152 7. Communications	-0.02	-0.49	0.32	-0.18
153 8. Finance	0.00	0.38	-0.13	0.24
154 9. Dwellings	0.01	1.35	-0.82	0.54
155 10. Public administration	-0.01	-0.15	0.10	-0.06
156 11. Community services	0.00	-0.05	0.03	-0.01
157 12. Entertainment and recreation	0.00	0.01	0.00	0.00

Table D.6

Other Shocks

Table D.6: Other Shocks

Variable	Import / Domestic twist (1)	Labour / capital twist (2)	Inter-regional twists (3)	Capital accumulation		CPI		Total (8)
				Tasmania (4)	Mainland (5)	Lagged (6)	Current (7)	
Regional Macroeconomic Variables								
1 Real GRP (at factor cost)	0.05	1.10	-0.33	-0.24	0.74	-0.34	0.30	1.28
2	-0.18	1.25	0.01	0.01	1.25	-0.55	0.54	2.33
3 Capital stock (rental weights)	0.00	0.00	0.00	0.65	0.00	0.00	0.00	0.65
4	0.00	0.00	0.00	0.00	1.60	0.00	0.00	1.60
5 Employment	0.07	1.43	-0.54	-0.48	0.96	-0.41	0.37	1.39
6	-0.26	1.71	0.01	0.02	1.08	-0.80	0.78	2.54
7 Real investment	0.00	-0.45	-0.35	-1.93	1.11	-6.34	6.03	-1.93
8	-0.36	-0.73	0.01	0.02	0.56	-6.64	6.37	-0.78
9 Real household consumption	0.01	0.43	-0.06	0.44	0.31	-0.27	0.27	1.13
10	-0.13	0.53	0.00	0.00	0.82	-0.43	0.43	1.22
11 Real exports	3.64	6.51	-0.74	-2.74	3.44	4.01	-3.79	10.33
12	4.14	6.39	0.00	0.09	4.25	4.03	-3.90	15.00
13 Real regional government consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15 Real Commonwealth consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17 Foreign imports	3.73	1.74	0.12	-1.48	1.00	-0.67	0.62	5.06
18	3.77	0.94	0.00	0.01	1.13	-1.62	1.57	5.79
19 Interstate imports	-0.43	1.07	1.07	-0.85	0.86	-1.17	1.10	1.67
20	-2.26	1.25	2.15	-0.62	0.75	-0.73	0.73	1.28
21 Interstate exports	-2.26	1.25	2.15	-0.62	0.75	-0.73	0.73	1.28
22	-0.43	1.07	1.07	-0.85	0.86	-1.17	1.10	1.67
23 Investment price index	0.02	-0.26	-0.17	-0.09	0.54	-0.46	2.38	1.96
24	0.10	-0.12	0.00	0.01	0.51	-0.30	2.23	2.44

Table D.6: Other Shocks (continued)

Variable	Import / Domestic twist (1)	Labour / capital twist (2)	Inter-regional twists (3)	Capital accumulation		CPI		Total (8)
				Tasmania (4)	Mainland (5)	Lagged (6)	Current (7)	
25 Consumption price index	0.00	-0.26	-0.11	-0.77	0.59	-0.10	2.05	1.40
26	0.00	0.01	0.00	0.02	-0.01	0.00	1.97	1.98
27 Export price index	0.27	0.25	0.07	0.27	1.11	0.47	1.50	3.94
28	0.19	0.19	-0.01	0.02	1.03	0.44	1.52	3.38
29 Regional government price index	-0.03	-0.26	-0.07	-0.04	0.25	-0.01	1.96	1.80
30	0.00	-0.24	0.00	0.01	0.34	0.04	1.91	2.07
31 Commonwealth government price index	-0.02	-0.26	-0.07	-0.04	0.25	0.00	1.96	1.81
32	0.00	-0.24	0.00	0.01	0.34	0.04	1.91	2.07
33 Foreign import price index	0.58	0.79	-0.01	0.03	1.39	0.80	1.14	4.72
34	0.57	0.79	-0.01	0.03	1.39	0.80	1.14	4.72
35 Interstate import price index	-0.08	-0.25	0.01	0.02	0.69	-0.01	1.98	2.35
36	-0.08	-0.04	0.14	0.40	0.89	0.19	1.75	3.24
37 Interstate export price index	-0.08	-0.04	0.14	0.40	0.89	0.19	1.75	3.24
38	-0.08	-0.25	0.01	0.02	0.69	-0.01	1.98	2.35
39 Real pre tax wage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41 GSP Deflator	0.02	-0.20	-0.08	-0.42	0.56	-0.09	2.03	1.82
42	-0.07	-0.20	0.00	0.01	0.06	-0.14	2.11	1.78

** For each variable, the first row contains the Tasmanian results, and the second row contains the Mainland results.*

Table D.6: Other Shocks (continued)

Variable	Import / Domestic twist (1)	Labour / capital twist (2)	Inter-regional twists (3)	Capital accumulation		CPI		Total (8)
				Tasmania (4)	Mainland (5)	Lagged (6)	Current (7)	
National Macroeconomic Variables								
43 Real GDP (market prices)	-0.11	1.30	0.00	0.01	1.25	-0.50	0.49	2.44
44 Real investment	-0.36	-0.73	0.00	-0.02	0.57	-6.63	6.36	-0.80
45 Real consumption	-0.12	0.53	0.00	0.01	0.81	-0.43	0.43	1.22
46 Real exports	4.13	6.39	-0.02	0.03	4.24	4.03	-3.90	14.91
47 Real reg. gov. consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48 Real Com. Gov. consumption	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
49 Real imports	3.77	0.95	0.00	0.00	1.13	-1.62	1.56	5.78
50 Investment price index	0.10	-0.12	0.00	0.01	0.51	-0.30	2.23	2.43
51 Consumption price index	0.00	0.00	0.00	0.00	0.00	0.00	1.97	1.97
52 Export price index	0.19	0.19	-0.01	0.03	1.03	0.44	1.52	3.39
53 Reg. gov. price index	0.00	-0.24	0.00	0.01	0.34	0.04	1.91	2.06
54 Com. Gov. price index	0.00	-0.24	0.00	0.01	0.34	0.04	1.91	2.07
55 Import price index	0.57	0.79	-0.01	0.03	1.39	0.80	1.14	4.72
56 GDP Deflator	-0.06	-0.20	0.00	0.00	0.07	-0.14	2.11	1.78
57 Nominal exchange rate	0.56	0.78	-0.01	0.03	1.37	0.79	1.12	4.65
58 Real exchange rate (1)	-0.63	-0.98	0.01	-0.03	-1.30	-0.93	0.99	-2.87
59 Real exchange rate (2)	-0.52	-0.69	0.00	-0.01	-0.46	-0.49	0.48	-1.68
60 BOT / GDP ratio	-0.05	0.98	0.00	0.01	0.53	0.99	-0.96	1.50
61 Terms of trade	-0.38	-0.59	0.00	0.00	-0.38	-0.38	0.37	-1.36

Table D.6: Other Shocks (continued)

Variable	Import / Domestic twist (1)	Labour / capital twist (2)	Inter-regional twists (3)	Capital accumulation		CPI		Total (8)
				Tasmania (4)	Mainland (5)	Lagged (6)	Current (7)	
Tasmanian Sectoral Outputs								
62 1. Agriculture	0.36	2.30	1.13	-0.88	1.43	0.59	-0.59	4.34
63 2. Mining	2.00	6.30	6.87	0.35	3.45	2.47	-2.57	18.88
64 3. Manufacturing	-0.38	2.41	0.06	-1.58	1.28	0.16	-0.19	1.75
65 4. Utilities	0.25	1.67	-0.11	-0.90	0.75	0.37	-0.37	1.66
66 5. Construction	-0.02	-0.53	-2.55	-1.37	0.97	-5.66	5.36	-3.80
67 6. Margin industries	0.25	0.92	0.03	-0.33	0.56	-0.36	0.34	1.42
68 7. Communications	-0.06	0.51	-2.09	-0.28	0.49	-0.43	0.41	-1.45
69 8. Finance	0.05	0.97	-4.15	0.09	0.69	-0.29	0.26	-2.37
70 9. Dwellings	0.00	0.00	0.00	3.26	0.00	0.00	0.00	3.26
71 10. Public administration	0.00	0.02	0.00	0.01	0.01	0.00	0.00	0.04
72 11. Community services	0.00	0.20	-0.08	-0.11	0.22	-0.14	0.14	0.23
73 12. Entertainment and recreation	-0.31	0.85	0.71	0.48	0.54	-0.38	0.37	2.25
Mainland Sectoral Outputs								
74 1. Agriculture	0.37	1.54	-0.03	0.02	0.74	0.67	-0.65	2.66
75 2. Mining	0.57	2.51	-0.03	0.02	3.78	0.67	-0.66	6.87
76 3. Manufacturing	-1.26	2.18	-0.01	0.03	1.21	-0.16	0.15	2.14
77 4. Utilities	-0.18	1.40	0.00	0.00	1.00	-0.06	0.06	2.22
78 5. Construction	-0.33	-0.31	0.06	-0.01	0.15	-6.03	5.77	-0.70
79 6. Margin industries	0.26	1.79	-0.01	0.02	1.29	-0.14	0.14	3.35
80 7. Communications	-0.46	2.06	0.02	0.02	1.53	0.22	-0.21	3.17
81 8. Finance	-0.31	1.45	0.04	0.01	1.34	-0.42	0.42	2.52
82 9. Dwellings	0.00	0.00	0.00	0.00	3.21	0.00	0.00	3.21
83 10. Public administration	-0.02	0.33	0.00	0.00	0.22	-0.06	0.06	0.53
84 11. Community services	-0.01	0.49	0.00	0.00	0.34	-0.14	0.14	0.82
85 12. Entertainment and recreation	-1.62	1.19	-0.02	0.00	1.17	-0.31	0.31	0.74

Table D.6: Other Shocks (continued)

Variable	Import / Domestic twist (1)	Labour / capital twist (2)	Inter-regional twists (3)	Capital accumulation		CPI		Total (8)
				Tasmania (4)	Mainland (5)	Lagged (6)	Current (7)	
Tasmanian Sectoral Employments								
86 1. Agriculture	0.58	3.69	1.87	-0.67	2.26	0.95	-0.94	7.73
87 2. Mining	2.20	6.96	7.79	-0.16	3.91	2.90	-3.02	20.58
88 3. Manufacturing	-0.46	3.05	-0.14	-1.17	1.59	0.24	-0.27	2.84
89 4. Utilities	0.55	3.70	-0.35	3.94	1.63	0.86	-0.86	9.46
90 5. Construction	-0.02	-0.56	-2.78	-1.60	1.05	-6.22	5.87	-4.27
91 6. Margin industries	0.30	1.30	0.01	-0.30	0.78	-0.51	0.48	2.06
92 7. Communications	-0.05	0.49	-2.03	-0.24	0.47	-0.42	0.39	-1.39
93 8. Finance	0.06	1.21	-5.23	-0.80	0.86	-0.37	0.33	-3.93
94 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95 10. Public administration	0.00	0.02	0.00	0.01	0.01	0.00	0.00	0.04
96 11. Community services	0.00	0.21	-0.09	-0.09	0.22	-0.15	0.14	0.25
97 12. Entertainment and recreation	-0.43	1.14	0.99	-1.23	0.72	-0.54	0.52	1.17
Mainland Sectoral Employments								
98 1. Agriculture	0.67	2.92	-0.06	0.04	1.71	1.20	-1.17	5.32
99 2. Mining	1.24	5.49	-0.07	0.05	4.26	1.58	-1.54	11.01
100 3. Manufacturing	-1.47	2.64	-0.01	0.03	1.69	-0.19	0.18	2.88
101 4. Utilities	-0.41	3.27	0.01	0.00	8.68	-0.15	0.14	11.54
102 5. Construction	-0.37	-0.43	0.07	-0.01	-0.10	-6.71	6.51	-1.05
103 6. Margin industries	0.33	2.33	-0.01	0.03	1.63	-0.15	0.15	4.30
104 7. Communications	-0.79	3.64	0.03	0.03	1.27	0.43	-0.41	4.20
105 8. Finance	-0.48	2.25	0.07	0.01	0.84	-0.68	0.67	2.67
106 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
107 10. Public administration	-0.02	0.33	0.00	0.00	0.26	-0.07	0.07	0.57
108 11. Community services	-0.02	0.51	0.00	0.00	0.37	-0.15	0.15	0.87
109 12. Entertainment and recreation	-2.16	1.59	-0.02	0.01	-0.61	-0.42	0.43	-1.19

Table D.6: Other Shocks (continued)

Variable	Import / Domestic twist (1)	Labour / capital twist (2)	Inter-regional twists (3)	Capital accumulation		CPI		Total (8)
				Tasmania (4)	Mainland (5)	Lagged (6)	Current (7)	
Tasmanian Sectoral Export Volumes								
110 1. Agriculture	1.74	2.87	-4.55	-1.63	1.43	1.45	-1.43	-0.13
111 2. Mining	4.94	10.00	-9.51	4.20	6.63	5.29	-5.21	16.33
112 3. Manufacturing	3.72	6.48	1.44	-4.28	3.18	4.22	-3.93	10.83
113 4. Utilities	5.73	7.82	0.67	-1.56	5.31	6.52	-5.28	19.22
114 5. Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115 6. Margin industries	5.73	7.82	0.67	-1.56	5.31	6.52	-5.28	19.22
116 7. Communications	5.73	7.82	0.67	-1.56	5.31	6.52	-5.28	19.22
117 8. Finance	5.73	7.82	0.67	-1.56	5.31	6.52	-5.28	19.22
118 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
119 10. Public administration	5.73	7.82	0.67	-1.56	5.31	6.52	-5.28	19.22
120 11. Community services	5.73	7.82	0.67	-1.56	5.31	6.52	-5.28	19.22
121 12. Entertainment and recreation	5.73	7.82	0.67	-1.56	5.31	6.52	-5.28	19.22
Mainland Sectoral Export Volumes								
122 1. Agriculture	1.98	1.65	0.21	0.03	-1.00	0.97	-0.97	2.85
123 2. Mining	1.70	2.70	0.19	0.04	5.68	0.99	-0.97	10.34
124 3. Manufacturing	5.11	8.09	-0.11	0.11	3.63	5.42	-5.29	16.96
125 4. Utilities	5.55	8.80	-0.09	0.12	5.56	6.13	-6.01	20.06
126 5. Construction	5.55	8.80	-0.09	0.12	5.55	6.13	-6.01	20.05
127 6. Margin industries	5.55	8.80	-0.09	0.12	5.56	6.13	-6.01	20.06
128 7. Communications	5.55	8.80	-0.09	0.12	5.56	6.13	-6.01	20.06
129 8. Finance	5.55	8.80	-0.09	0.12	5.56	6.13	-6.01	20.06
130 9. Dwellings	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
131 10. Public administration	5.55	8.80	-0.09	0.12	5.56	6.13	-6.01	20.06
132 11. Community services	5.55	8.80	-0.09	0.12	5.56	6.13	-6.01	20.06
133 12. Entertainment and recreation	5.55	8.80	-0.09	0.12	5.56	6.13	-6.01	20.06

Table D.6: Other Shocks (continued)

Variable	Import / Domestic twist (1)	Labour / capital twist (2)	Inter-regional twists (3)	Capital accumulation		CPI		Total (8)
				Tasmania (4)	Mainland (5)	Lagged (6)	Current (7)	
Tasmanian Sectoral Basic Prices								
134 1. Agriculture	0.27	0.37	0.64	0.08	1.10	0.47	1.48	4.39
135 2. Mining	0.24	0.15	0.61	-0.25	0.94	0.44	1.52	3.65
136 3. Manufacturing	0.02	-0.02	0.06	0.43	0.91	0.19	1.76	3.35
137 4. Utilities	0.32	0.03	-0.41	4.62	1.32	0.58	1.36	7.81
138 5. Construction	-0.04	-0.39	-0.25	-0.19	0.53	-0.61	2.52	1.57
139 6. Margin industries	-0.05	-0.71	-0.09	-0.15	0.44	-0.21	2.15	1.38
140 7. Communications	-0.05	-0.13	-0.04	0.03	0.39	0.08	1.85	2.13
141 8. Finance	-0.03	-0.70	-1.12	-1.04	0.40	-0.11	2.06	-0.54
142 9. Dwellings	-0.02	0.49	-0.27	-4.47	1.09	-0.68	2.60	-1.25
143 10. Public administration	-0.02	-0.17	-0.07	0.00	0.25	0.01	1.94	1.95
144 11. Community services	-0.03	-0.29	-0.11	-0.01	0.21	-0.02	1.98	1.73
145 12. Entertainment and recreation	-0.16	-0.98	0.27	-2.16	0.41	-0.20	2.17	-0.65
Mainland Sectoral Basic Prices								
146 1. Agriculture	0.45	0.80	-0.04	0.03	1.57	0.83	1.16	4.79
147 2. Mining	0.53	0.72	-0.03	0.03	0.87	0.84	1.13	4.08
148 3. Manufacturing	-0.01	0.04	0.00	0.02	1.03	0.26	1.71	3.04
149 4. Utilities	-0.06	0.00	0.00	0.01	5.94	0.14	1.83	7.86
150 5. Construction	-0.03	-0.38	0.01	0.01	0.19	-0.87	2.81	1.73
151 6. Margin industries	0.06	-0.36	0.00	0.01	0.57	0.05	1.91	2.25
152 7. Communications	-0.25	-0.03	0.01	0.02	0.24	0.31	1.68	1.98
153 8. Finance	-0.22	-0.72	0.03	0.01	-0.35	-0.27	2.25	0.72
154 9. Dwellings	-0.25	0.96	0.00	0.01	-2.93	-0.84	2.84	-0.20
155 10. Public administration	0.02	-0.17	0.00	0.01	0.49	0.09	1.87	2.31
156 11. Community services	0.00	-0.28	0.00	0.00	0.25	0.03	1.95	1.95
157 12. Entertainment and recreation	-0.39	-0.48	0.00	0.01	-0.99	0.00	1.96	0.12

APPENDIX E. FEDERAL-F / MONASH INDUSTRY / COMMODITY CONCORDANCE

FEDERAL-F / MONASH Industry Concordance

FEDERAL-F Industry	MONASH Industry
1.Agriculture	I1Pastoral I2WheatSheep I3HighRain I4NthBeef I5MilkCattle I6OthExport I8Poultry I9AgServ I7ImportComp
2. Forestry and logging	I10Forestry
3. Fishing and hunting	I11Fishing
4. Mining	I12IronOre I13NFerrous I14BlkCoal I15OilGas I16OthMin I17MinServ
5. Meat, smallgoods, and poultry	I18Meat
6. Milk products	I19Dairy I21OilFat
7. Fruit and vegetable products	I20FrtVeg
8. Processed seafoods	I25Sea_Sugar
9. Confectionary and cocoa	I24Confect
10. Cereal products, B & Cs	I22Flour I23Bakery
11. Beverages and malts	I26SoftDr I27Beer I28OthDrink
12. Tobacco	I29Tobacco
13. Textile, clothing and footwear	I30Ginning I31Synthetic I32CottonYa I33WoolYarn I34TextileF I35Carpets I36Canvas I37Knitting I38Clothing I39Footwear

FEDERAL-F Industry	MONASH Industry
14. Logs, sawmilling, and woodchips	I40Sawmill
15. Joinery, boards, furnitures and mattresses	I41Panels I42Fittings I43Furniture
16. Paper, paper boards, and other paper products	I44PulpPaper I45BagsBoxes I46Sanitary
17. Printing and other allied industries	I47NewsBooks I48CommPrint
18. Basic chemicals	I49Fertilisr I50BasicChem I51Paints I52Pharmacy I53Soaps I54Cosmetics I55Explosive
19. Petroleum	I56Petrol
20. Non-metallic mineral products	I57Glass I58ClayProd I59Cement I60Readymix I61Pipes I62Plaster
21. Iron and other basic metal products	I63IronSteel I64NFerrous
22. Structural, sheet and other fabricated metal products	I65Structurl I66SheetMetl I67Wire
23. Ship and boat building, motor vehicles and parts	I68MotorVeh I69Ships I70Trains
24. Machinery, equipment, and miscellaneous	I71Aircraft I72SciEquip I73Electron I74HousAppl I75ElectEq I76AgMach I77ConMach I78ManuMach I79Leather I80Rubber I81Plastic I82Signs I83SportEq

FEDERAL-F Industry	MONASH Industry
25. Electricity	I84Electrcty
26. Other utilities	I85Gas I86Water
27. Residential building	I87Resident
28. Other construction	I88OthBuild
29. Wholesale, retail trade, and insurance (MAR)	I89Wholesale I90RetailTrd I102Insurnce
30. Transport and storage (MAR)	I93RoadTrans I94RailTrans I95WaterTran I96AirTransp I97TransServ
32. Communications	I98Communic
33. Finance property and business services	I99Banking I100NonBank I101Investm I103OthFinan I91MechRep I92OthRepair
34. Ownership of dwellings	I104Dwelling
35. Public administration and defence	I105PubAdmin I106Defence
36. Community service	I107Health I108Educate I109Welfare
37. Entertainment and recreation	I110Entrtain I112PerServ I113Other
31. Restaurants and hotels (MAR)	I111Hotels

FEDERAL-F / MONASH Commodity Concordance

FEDERAL-F Commodity	MONASH Commodity
1.Agriculture	C1Wool C2Sheep C3Wheat C4Barley C5OthGrains C6MeatCattle C7MilkCattle C8OthExport C9ImportComp C10Poultry C11AgServ
2. Forestry and logging	C12Forestry
3. Fishing and hunting	C13Fishing
4. Mining	C14IronOre C15NFerrous C16BlkCoal C17OilGas C18OthMin C19MinServ
5. Meat, smallgoods, and poultry	C20Meat
6. Milk products	C21Dairy C23OilFat
7. Fruit and vegetable products	C22FrtVeg
8. Processed seafoods	C27Sea_Sugar
9. Confectionary and cocoa	C26Confect
10. Cereal products	C24Flour C25Bakery
11. Beverages and malts	C28SoftDr C29Beer C30OthDrink
12. Tobacco	C31Tobacco
13. Textile, clothing and footwear	C32Ginning C33Synthetic C34CottonYa C35WoolYarn C36TextileF

FEDERAL-F Commodity	MONASH Commodity
	C37Carpets C38Canvas C39Knitting C40Clothing C41Footwear
14. Logs, sawmilling, and woodchips	C42Sawmill
15. Joinery, boards, furnitures and mattresses	C43Panels C44Fittings C45Furniture
16. Paper, paper boards, and other paper products	C46PulpPaper C47BagsBoxes C48Sanitary
17. Printing and other allied industries	C49NewsBooks C50CommPrint
18. Basic chemicals	C51Fertilisr C52BasicChem C53Paints C54Pharmacy C55Soaps C56Cosmetics C57Explosive
19. Petroleum	C58Petrol
20. Non-metallic mineral products	C59Glass C60ClayProd C61Cement C62Readymix C63Pipes C64Plaster
21. Iron and other basic metal products	C65IronSteel C66NFerrous
22. Structural, sheet and other fabricated metal products	C67Structurl C68SheetMetl C69Wire
23. Ship and boat building, motor vehicles and parts	C70MotorVeh C71Ships C72Trains
24. Machinery, equipment, and miscellaneous	C74SciEquip C75Electron C76HousAppl C77ElectEq C78AgMach C79ConMach

FEDERAL-F Commodity	MONASH Commodity
	C80ManuMach C81Leather C82Rubber C83Plastic C84Signs C85SportEq C73Aircraft
25. Electricity	C86Electrcty
26. Other utilities	C87Gas C88Water
27. Residential building	C89Resident
28. Other construction	C90OthBuild
29. Wholesale, retail trade, and insurance (MAR)	C91Wholesale C92RetailTrd C104Insurnce
30. Transport and storage (MAR)	C95RoadTrans C96RailTrans C97WaterTran C98AirTransp C99TransServ
31. Restaurants and hotels (MAR)	C113Hotels
32. Communications	C100Communic
33. Finance property and business services	C101Banking C102NonBank C103Investm C105OthFinan C93MechRep C94OthRepair
34. Ownership of dwellings	C106Dwelling
35. Public administration and defence	C107PubAdmin C108Defence
36. Community service	C109Health C110Educate C111Welfare
37. Entertainment and recreation	C112Entrtain C114PerServ C115Other

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